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ORIGINAL ARTICLES.

KATATONIA, WITH SIX ILLUSTRATIVE CASES.

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IF one sets out to discover from the text-books and neurologic journals whether or not there is such a disease as katatonia, and if so, in what this disease consists, he will probably emerge from the study of the already voluminous literature of the subject in a state of considerable doubt and perplexity, and with a vivid realization of the defects and inaccuracies of the several existing systems of classification of mental disorders. Quoting the definitions of two English writers, we find that katatonia is "characterized by a pathetical emotional state and verbigeration, with a condition of motor tension"; and that it is a "cerebral disease with cyclical symptoms ranging in succession from primary melancholia to mania, stupidity, and dementia, one or more of these stages being occasionally absent [how many of the four stages may be absent and still leave us a katatonia?], whilst convulsive and cataleptoid symptoms [both?] accompany the mental changes."

The published accounts of the disease differ in many particulars, and the reported cases show a wide variation in symptoms; but the more typical cases, we are told, pursue some such course as the following: Beginning as a primary melancholia, usually in a subject exhibiting evidences of the insane constitution, the emotional state soon changes to excitement or exaltation of a peculiar kind, with systematized delusions of a grandiose nature, accompanied by "verbigeration"—*i. e.*, meaningless repetition of words and phrases in a theatric or declamatory manner; or we may have a simple acute mania, or a melancholia agitata; this stage terminates after a longer or shorter time in stupor or apathy, with cataleptoid symptoms, mutism, and not rarely convulsive seizures of some kind; or, the psychic and somatic symptoms may closely resemble those of a melancholia attonita. The disorder terminates in chronic delusional dementia of a paranoiac cast, in rare instances in recovery, or in death, the last occurring with notable frequency from tuberculosis.

It is therefore a species of *folie circulaire* plus catalepsy, or a circular insanity in which one stage is a melancholia attonita. Kahlbaum and his supporters would regard it as a clinical and pathologic entity, having its characteristic symptoms and pathologico-anatomic findings, but the majority of alienists who have expressed themselves upon the subject, while recognizing in the name a convenient designation for a rare and interesting group of symptoms, deny to katatonia the honor of a separate place in their schemes of classification, and look upon the affection as only one of several forms of a pathologically alternating mental state, and distribute the cases of katatonia among the allied and more commonly recognized forms of insanity—hysterical mania, secondary paranoia, circular insanity or melancholia attonita. Clinical study of the insane simply adds to the confusion. The few typical cases, exhibiting the procession of melancholia, mania, stupor with cataleptoid and convulsive states, verbigeration and mutism, present a very striking picture; but when one or more stages are, as is usual, absent, the matter of diagnosis is by no means plain; gradations from katatonia into a half-dozen other forms of insanity can be traced, and all of the symptoms of katatonia, mental as well as physical, have been noted, singly or in combination, in cases of insanity that cannot by any effort be twisted into the katatonic mould.

Kiernan states that two per cent. of the patients in the New York City Asylum at Ward's Island (males) some years ago were the subjects of katatonia. The proportion of such cases among the insane of Alabama, judging from the two thousand five hundred cases treated at the State Insane Hospital during the past eight years, is certainly very much less than this; in fact, only one very typical case (Case I) has been observed; admitting a liberal number of transition-forms, in which "one or more of the stages are absent," at most a dozen instances of the affection among our twenty-five hundred patients have been seen, and almost all of these could with equal justice be included among other varieties of insanity. Our one case exhibiting most of the characteristic mental and physical symptoms of katatonia, with several others illustrating the transition-forms spoken of, is herewith reported:

CASE I was a white woman, of neurotic heredity, a native of Alabama, without education, a laborer's wife. She married at twenty years of age, but had no children; after four years her husband

deserted her, leaving her destitute. Two months later, following a brief period of vague depression and fear, she passed into a state of melancholia, with persecutory delusions, suspicion, and irritability. Eight weeks after the mental disease was recognized she was placed in the insane hospital.

Her condition at that time was as follows: Height, five feet two inches; weight, one hundred and six pounds; hair brown; eyes gray; complexion fair. Circumference of head was 52.7; antero-posterior diameter, 18.7; transverse, 14.3 cm.; the ear-lobes were small and ill-shaped, the lobes rudimentary and completely attached; the teeth were regular, the palate well formed. There was no striking asymmetry of face or skull, but in the latter the lines of suture were prominent; a slight depression was noted in the region of the anterior fontanel, and there was flattening of the occipital region. The body was tolerably well nourished and very muscular. The heart was normal; the lungs normal, save for the presence of a few bronchial râles heard posteriorly, on both sides. The woman had a slight hacking cough, and a temperature of 99.2° The breath was offensive, the tongue coated. Examination of the urine was entirely negative in results. There was no anemia. The patient was confused, incoherent, fretful, cross, and easily irritated; she replied to some questions with fair intelligence, but paid no attention to others. Distinct delusions were not elicited, but her manner indicated dread and suspicion. She stared blankly into vacancy, picked at her clothing or at the walls, or walked aimlessly about. She took her food voluntarily and was not unclean in habits.

During the three months immediately succeeding her admission the psychic features of the case altered but little; the woman remained quiet and indifferent most of the time, but when interfered with would rouse up, curse or scream, and occasionally strike anyone who happened to be standing near. There was a gradual failure in physical health during this time; fever was constant, and the patient lost flesh; she had a cough, with scanty expectoration of muco-purulent matter, in which a single examination failed to detect the bacillus tuberculosis. Physical examination of lungs was also without positive result, although the general symptoms were those of pulmonary tuberculosis in an early stage. At the expiration of about three months some improvement in the physical state was inaugurated; fever and cough disappeared, and the patient gained in weight and grew stronger. The mental symptoms also underwent a change in character, the depression, fits of reverie and abstraction gradually giving place to maniacal excitement; she became noisy, pugnacious, destructive, and very filthy in her habits; her talk was incoherent and usually abusive, but verbigeration was not shown. At long intervals during this period of excitement she would lapse into a state of stupor or reverie for a few moments, but when spoken to, would arouse and begin her noise and restless movement again. This continued for about thirteen months, her bodily condition remaining fair until toward the end of this time, when symptoms of tuberculosis reappeared, accompanied by a kidney-lesion, as shown by alternating diarrhea and constipation, headache, edema of the lower extremities and eyelids, and the constant presence in the urine of a small percentage of albumin, with many hyaline, granular, and nucleated casts, with disintegrating renal cells. As the physical weakness progressed, a change in the mental symptoms occurred, the heretofore almost continuous excitement resolving itself into violent maniacal outbursts, with intervening periods of quiescence, these gradually becoming of longer duration and assuming more and more the character of stupor. While in the stuporous state she would remain immovable for minutes or hours, and would not respond to questions. If taken hold of and compelled to change her posture, she would rouse up and curse, abuse, scream, and occasionally attempt to fight, after a short time relapsing into a condition of apathy. As the state of stupor deepened and grew more continuous, it was observed that her limbs retained the posture given them, and in a short time she exhibited a very typical condition of catalepsy; her muscles offered no resistance to movement, but held the limbs and trunk in any position in which they were placed; she would sit or stand for hours as impassive as a graven image, staring before her, but seeing nothing. The explosions of excitement became of briefer duration and rarer occurrence, and finally ceased altogether; after this she would remain quiet and immovable for days together, persistent mutism accompanying the stupor. During all this time emaciation was slowly progressive; she had a constant rise of temperature, reaching at times 102.5°; had night-sweats, diarrhea, a hectic flush on the cheeks, cough (occasional only, and very slight), scanty muco-purulent expectoration, in which, after several failures, the bacillus tuberculosis was detected. The physical signs of tuberculous disease of the lungs were in the beginning very few and inconclusive; dulness would be well shown at one examination, only to disappear entirely within twelve hours, and the abnormalities of respiratory sounds showed many variations from time to time. Cavities were detected toward the close.

After the woman became helpless and lay abed, she would remain in one position until moved by the nurse; she seemed almost devoid of sensation; the flies crawled over her face and into her open eyes and mouth unmolested and unnoticed; pins thrust through her skin called forth no evidence of pain; she exhibited almost no sign of life, save in her feeble heart-action and shallow respiratory movements.

The disease reached its inevitably fatal termination six months from the time of the return of tuberculous symptoms, two years after the onset of insanity.

This case offers an example of a fairly typical katatonia, but fails to illustrate the "verbigeration" that Spitzka in his definition makes an essential feature of the disease, and that Kahlbaum would regard as the most characteristic single symptom. The woman undoubtedly had tuberculosis at the time she was brought to the hospital, the accompanying

mental state being depression with a tendency to stupor; a remission or recovery from the tuberculous malady marked the maniacal period, and the return of the tuberculosis, with its steady progress toward a fatal termination, characterized the period of stupor and mutism, with cataleptic states.

The pathology of katatonia involves some considerations of especial interest. It seems undoubted that the scrofulous diathesis acts as a predisposing cause, if, indeed, it be not essential to the development of the disorder. Probably three-fourths of the fatal cases die of tuberculosis. Kahlbaum found in his post-mortem examinations many evidences of basilar meningitis and healed hydrocephalus. Kiernan, discovering similar lesions, draws the inference that a "basilar meningeal process of tuberculous origin" has existed in infancy.

Kiernan also found in one case a condition of mild sclerosis of the spinal cord and anterior pyramids, approximating in character senile sclerosis, and suggesting a possible connection between this lesion and the motor symptoms of katatonia. A somewhat marked opacity of the pia-arachnoid in the region of the Sylvian fissure and Broca's center, noted in many cases, has been assigned as the pathologic basis of the abnormalities of speech. These claims must be regarded as not yet fully proved.

Other appearances noted have been: passive venous engorgement of the vessels of the brain and pia; gelatinous exudate into the meshes of the pia-arachnoid; exudations upon the inner surface of the dura; exudation of "mucoid substance" upon the floor of the fourth ventricle; accumulations of lymphoid cells in the perivascular and pericellular spaces; pigmentation of pyramidal cells. In the later stages of the disease, *i. e.*, when dementia has become well established, there is atrophy of the convolutions, as is frequent in the late stages of many other forms of mental disorder.

All of the pathologic changes mentioned have been discovered, singly, or combined in various ways, in other forms of insanity, and characteristic lesions in katatonia have not yet been demonstrated.

The results of post-mortem examination in the case under consideration resulted as follows:

Autopsy, four hours after death. Emaciation was extreme, the weight of the body being about fifty pounds. Rigor mortis was entirely wanting.

The scalp was thin, the hair scanty. The antero-posterior diameter of the skull was 18.0; the transverse, 13.9; the circumference, 51.2 cm. There was no visible asymmetry; the bone was of medium thickness and soft; the sutures were mostly open; the diploë thin and red; the inner table pale, deeply grooved, and pitted. Small blood-coagula were found in the longitudinal sinus. Underlying the dura, on the left side, was a soft, friable, deep-red membrane-like blood-clot; the clot was evidently a recent one, and adhered very slightly to the inner surface of the dura; it measured about one-sixteenth of an inch at its thickest part; it covered almost the entire convexity of the left hemisphere, thinning out at the edges, where it lost its blood-clot character, and seemed continuous with a pale-yellow, very thin, and soft membrane, which extended a short distance beyond the blood-clot in all directions. The right half of the dura was free from disease. The dura at the base of the brain showed no evidence of existing or of former disease. The pia was thickened and edematous over the entire vertex, and opalescent along the lines of the larger bloodvessels and fissure of Sylvius. On the left side of the vertex it was deeply stained where it had lain in contact with the hemorrhagic clot, and near the anterior extremity of the interparietal fissure there was an extravasation of blood into the sub-arachnoid space. The pia at the base, and its various laminæ, were normal in appearance. The arteries of the base of the brain—the circle of Willis and its branches—showed no lesion or abnormality of anatomic disposition. The weight of the right hemisphere of the brain was 18¼ ounces; of the left, 18¾ ounces; of cerebellum, pons, and medulla, 5¼ ounces=42¼ ounces, the pia attached. Some atrophy was apparent in the gaping gyri and shrunken convolutions of the anterior lobe and motor area. There were no abnormalities of gyral arrangement worthy of mention. The brain-tissue was softish and watery; the gray layer was pale; the puncta vasculosa few; the lateral ventricles were large, and contained a little fluid; the ependyma and choroid plexus were normal. The basal ganglia, the pons, the medulla, and cerebellum exhibited no lesion.

The spinal cord was not removed.

The fat panniculus was absent from the thorax. The muscular tissue was atrophic, the costal cartilages unossified. The ribs and sternum were soft and fragile, bending easily, and seemed in great part lacking in inorganic salts; the ribs were readily cut with a knife. Upon firm compression a reddish semi-fluid mass could be made to exude from the cut ends of the bones. The precordial space was small. The pericardium showed no signs of disease. The heart was soft, pale, and relaxed; the superficial vessels tortuous; no atheroma or other disease was visible to the naked eye. External deposits of fat were not present. The muscular tissue was pale. All of the cavities contained soft, dark clots, and in each ventricle was a firm fibrinous clot which extended some distance into the aorta and pulmonary artery. There was no lesion of the valves. The aorta contained a few pale-yellowish atheromatous spots. The weight of the heart was 5½ ounces.

Old, firm adhesions existed at the apex of the right pleural cavity. Little or no fluid was present, and no signs of recent disease. The right lung was soft, pale, and edematous; there was slight anthracosis; all the lobes contained scattered tuberculous nodules, most numerous in the upper lobe. The nodules were small and cheesy. No cavities or areas of consolidation were found. The bronchi

seemed normal. The weight of this lung was 10 ounces.

Old adhesions were present throughout the entire extent of the left pleura; there were no recent adhesions or signs of disease. There were cavities in both lobes of the left lung, containing very offensive purulent matter; two or three cavities were nearly an inch in diameter; there were numerous smaller ones, many cheesy nodules, and, especially in the lower lobe, extensive patches of consolidation. Some of the smaller bronchial tubes were surrounded by caseous masses.

The bronchial lymph-nodes were filled with tuberculous nodules and anthracotic masses.

The peritoneum showed no lesion. The spleen was small, soft, and dark-colored; the capsule thin; its weight was 2½ ounces. The liver was dark, well filled with blood, and relaxed; its weight, 29 ounces. The gall-bladder was nearly empty. The right kidney was firm, pale, and small; the capsule slightly adherent, the cortical substance thin, pale, and the striæ indistinct; the pyramids were also pale, the boundary-layer a little darker in color; weight, 3 ounces. The left kidney weighed 3¼ ounces, otherwise resembling its fellow.

The supra-renal bodies were small, pale, and firm. No gross lesions existed. The stomach and intestinal tract were free from disease. There were no tuberculous ulcers or nodules in the small intestine, and the mesenteric glands were normal. The abdominal aorta showed some yellow splotches of atheromatous disease.

The ovaries were small, white, and scarred; the uterus, tubes, and ligaments were normal. The bladder was empty and without lesion.

Sections of the kidney studied microscopically showed irregular thickening of the capsule; bands and patches of interstitial thickening, with numerous round cells; some of the bloodvessels had thickened walls, some were tortuous. The Malpighian tufts showed an increase in nuclei, and proliferation of the cells lining the capsules; some of the tufts were entirely destroyed. The epithelial cells in the convoluted tubules were very granular and showed some disintegration; some tubules were entirely choked with débris, some contained casts. In the left kidney several small tuberculous nodules, with giant-cells, were discovered. The sections from the right kidney showed no cheesy nodules. With this exception the minute appearances of the two organs were very similar.

Preparations made from the dura and the underlying clot exhibited practically no lesion of the dura; the delicate film extending beyond the edges of the clot was composed of lymphoid cells, a few red blood-cells, and fibrin-shreds, held together by a homogeneous gelatinous material; it contained no capillaries. Between the blood-clot and the dura, this layer, if it existed, could not be detected; what was seen was a normal dura, and lying against its inner surface, a mass of coagulated blood; the delicate film referred to, and the mass of blood-cells of the clot seemed to merge into one another at the periphery of the clot. There was no evidence of inflammatory change in the dura, and no newly-formed bloodvessels were detected in the clot anywhere.

Aside from the tuberculous disease of the lungs, the nephritis, and the sub-dural hemorrhage, the autopsy was negative in result. The basal dura was smooth and to the naked eye of normal appearance; the pia covering the base, its extensions, and that portion in the region of Broca's center, were not noticeably affected. The brain and its membranes showed no peculiar or characteristic change.

The hemorrhage beneath the dura affords an instance of "pachymeningitis interna hæmorrhagica." In this instance, as in the other cases discovered in our post-mortem room, the effusion of blood would seem to be the primary lesion, the very insignificant changes present in the dura occurring as a consequence of the irritation of the extensive blood-clot. Sub-dural hemorrhage is not of rare occurrence among the insane. We have found fourteen instances in 142 autopsies—nearly 10 per cent.

The next case, while less typical than the one already reported, is still markedly katatonic in character. There is, however, no stage of exaltation, no verbigeration; the cyclic changes are confined to exacerbations of melancholia, with stupor and catalepsy, with intervals of partial recovery, terminating in delusional dementia.

CASE II was a minister of the Methodist Church, of neurotic heredity, unmarried, of a liberal education; lues and alcohol were excluded. At the age of twenty-seven he had an attack of mental disorder of a melancholic character, recovering entirely and resuming his clerical work after a short time. Four years later he had a sudden and unexpected return of mental disorder—he was preaching, suddenly stopped short, bowed his head upon his hands, and remained immovable; he was taken from the church by his friends, and found to be in a cataleptic condition, and mute. After several months of stuporous melancholy with persistence of the cataleptic state, he was placed in the insane hospital. After four months a slow improvement began, and within twelve months he was comparatively well and talked readily and rationally; he was quiet, able and willing to work, and his physical condition was better; some vague religious delusions persisted, with occasional cataleptoid seizures. He remained unchanged for five years, and was then taken home by his family; but, soon relapsing, he was returned to the hospital in much the same condition as when first admitted, although the stupor was less pronounced and the mental depression more active; he had made one attempt at suicide while at home. He continued melancholic, hysteric, nervous, and emotional, with fits of reverie and cataleptic immobility, for some months; he exhibited religious delusions, and received commands from heaven; he occasionally refused food; and had periods of mutism of varying duration. After a time the active depression subsided; he grew less emotional and

nervous; the cataleptoid symptoms became less prominent; and his bodily state improved. He has never recovered; his present state (fourteen years after the first appearance of the insanity) is one of secondary paranoia, with fixed religious delusions and some dementia; at long intervals there are some cataleptoid manifestations; he is quiet and harmless, and talks readily and coherently. Physically he is spare and somewhat cachetic in appearance. He has an organic heart-lesion; casts and albumin are found in his urine; there is some arterial hardening, but no symptoms of tuberculosis. The case is hopelessly chronic.

The third case is one of melancholia attonita, with mutism and cataleptic symptoms. The cyclic feature is wanting.

CASE III was a white man, a peddler, married, with limited education. The family history could not be obtained. At the age of thirty, having previously exhibited no eccentricity or intellectual weakness, he suffered a series of financial and domestic misfortunes; grew nervous and despondent, and eventually passed into a condition of acute melancholia, with delusions of suspicion and persecution, rendering necessary his commitment to the insane hospital.

The active melancholic symptoms soon gave place to a state of melancholic stupor, attended with cataleptoid manifestations. He lay in bed for months, would not speak, would not eat, was utterly inert and passive. He had one epileptiform convulsion four months before his death. He was fed through the stomach-tube for three months; and finally died of marasmus eighteen months after his admission to the hospital. There was no autopsy.

Case IV is even less typical. It is a simple primary confusional insanity, with catalepsy:

CASE IV was a negro man, a laborer, without education, and unmarried. Signs of the insane constitution were marked. The family history was unobtainable. When nineteen years old the man had typhoid fever, followed by mental weakness taking the form of acute dementia and slowly increasing in intensity; after the stupor was well established, cataleptic symptoms appeared, and in this condition, which might be described as a "primary dementia, with catalepsy," he was admitted to the insane hospital. His condition has not changed materially since that time (sixteen months). He sits immovable, refuses to speak, will not go to his meals or make any attempt to take his food, until with plate before him and knife and fork in hand he is given a few mouthfuls by the nurse; he then finishes his meal unassisted. The cataleptoid states are well marked, but occasionally the man will change his position voluntarily. He comprehends perfectly, and, even when in a state of cataleptic immobility, watches sharply what is done by others near him, following with his eyes all movements made. There is no depression or exaltation, no cyclic changes whatever; he has not spoken since his admission.

His physical health is poor. His urine contains albumin and tube-casts, and there are some symptoms of tuberculosis.

In Case V we have many of the symptoms of katatonia, associated with exophthalmic goiter:

CASE V was a white female, of a slightly neurotic, but unusually intelligent family, liberally educated, quick-witted and vivacious, and with some signs of the insane constitution. At the age of nineteen her previously recognized nervousness and hysteric tendencies became more marked, and were accompanied by cardiac palpitation and circulatory disorders; soon an enlargement of the thyroid gland, with exophthalmos, made itself apparent, and in time a typical picture of exophthalmic goiter was presented. The action of the heart was irregular and feeble, and at times very rapid—approaching two hundred a minute; there was much vasomotor disorder, with cyanosis of the skin and profuse sweating; dyspeptic symptoms, irregular and scanty menstruation, with a condition of general mental instability, also existed; the woman was moody, fretful, had fits of passion, and often grew angry with her relatives and friends, and made most unreasonable requests. She had frequent hysteric seizures; when at her worst, cataleptoid states were occasionally present.

About a year after the onset of the disease she had an attack of continued fever, resembling typhoid, which confined her to bed for several months and came near proving fatal. Two years later she had a similar, or, if possible, more severe attack, but again recovered, and then began improving in physical state; the goiter and exopthalmos slowly diminished, and she gained greatly in weight. There was, however, no change for the better in her mental condition; on the contrary, she became more irritable and more unreasonable, with exaggerated ideas of self-importance; she developed a fondness for social gaieties, spent money wastefully, dressed extravagantly, and sometimes fantastically; if crossed in any way she flew into a passion or had an hysteric attack, and at these times was markedly cataleptic. She ran away from home during the night on one occasion, and, after giving a great deal of trouble to her family, was finally sent to the insane hospital, seven years from the time the exophthalmic goiter was recognized. She then seemed in good health, with mental symptoms as sketched. She exhibited a great variety of symptoms during the succeeding three years, with a gradual failure in health and a steady passage into dementia. Her chief mental attitude was one of mild exaltation with a feeling of self-importance, a theatric and declamatory speech, which, based upon unusual intelligence and education, made a very interesting combination. At irregular intervals this excitement would give place to usually brief periods of hysteric melancholy, with marked cataleptoid symptoms; and she had two long periods of melancholia attonita, with occasional refusal of food and mutism, marked catalepsy and confinement to bed. The last of these covered the last months of the patient's life; she steadily emaciated, had a rise of

temperature, and diarrhea, night-sweats, and other symptoms of tuberculosis. She died at twenty-nine, ten years after she became insane. There was no autopsy. During the entire time of her stay in the hospital she exhibited the somatic evidences of Basedow's disease, in slight goiter, slight exophthalmos, tachycardia, circulatory abnormalities, and profuse sweating. Omitting the atypic initial stage and Basedow's disease, we have remaining in the alternating mental states, verbigeration, paranoiac exaltation, atonic melancholy, mutism, cataleptoid and hysteric conditions—a very characteristic katatonia.

CASE VI was a white female, of limited education and neurotic heredity—her mother, brother, and sister being insane. Signs of degeneracy were marked. She married at twenty-two; a year later miscarried at the seventh month, and had a mild attack of what may be termed hysteric melancholia, but recovered after a month. Two years later she miscarried a second time, again at the seventh month, and passed into a state of atonic melancholy, in which, three months later, she was admitted to the hospital. She at first exhibited some persecutory delusions, but stupor soon became the most prominent symptom. She lost flesh rapidly. On admission she was in a state of complete and typical "melancholia with stupor," sitting for hours in one position, staring vacantly, the saliva running from her mouth. She would not speak, neglected to eat, to attend to calls of nature, etc. Her limbs offered a passive re-resistance to movement, and preserved for a short time any position given them, though cataleptic symptoms were never pronounced. She was thin, very pale, and anemic. The hemoglobin was estimated at 20 per cent., the red corpuscles at 3,214,000 to the cubic millimeter. Albumin and casts were found in the urine, and there was edema of the feet, legs, and face. There was cyanosis of the hands and general sluggishness of the circulation. There was an anemic heart-murmur, but no lung-complication and no fever. Put in bed, she lay passive and immovable. Tr. ferri chloridi was given. Food was administered with a spoon by a nurse. The patient had at times nausea, vomiting, and diarrhea. After three months the hemoglobin had risen to 62 per cent., and the red corpuscles to 4,212,000, albumin and casts being still present. She became less demented and would eat voluntarily, and reply to questions. She continued slowly to grow better in mental state, and got out of bed and gained flesh. After about twenty months she had an attack of excitement and irritability, and was very violent and pugnacious for a few weeks; she then became quiet and went into a second period of melancholia with stupor, with partial cataleptic states, circulatory sluggishness, and mutism. This passing off left her in a state of "secondary paranoia," *i. e.*, she was perfectly quiet and conversed rationally most of the time, had a good memory, and gave little indication of mental disorder, save for her fixed and systematized delusions and occasional slight exhilaration. She has, since she recovered from the last attack of melancholy, gained a great deal in weight; the hemoglobin has risen to 82 per cent., the corpuscles to 5,112,000. The urine still shows an occasional cast and a trace of albumin. The mental aberration is now of about three years' standing and will probably persist in some form.

In addition to the cases here sketched we have had probably as many more that exhibited cataleptoid symptoms in some form, but were in other respects even less typical of the condition under consideration than Cases III, IV, and VI. Including all of these as katatonia, the proportion of such cases, as already mentioned, is still very small—not more than half of 1 per cent. of our insane population.

INDUCED LABOR AS RELATED TO PUERPERAL ECLAMPSIA.[1]

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THE work of modern investigators into the pathogenesis of eclampsia is only less remarkable for its painstaking labor than for its inadequate results. The theories deduced are almost as many as the writers deducing them. But in spite of this diversity of theory and conclusion there is discernible a tendency to agreement upon certain points of the most vital clinical importance.

It is probably fair to say, then, that modern opinion inclines to consider eclampsia as due to an intoxication either from retained body-excreta, or from the direct presence of microörganisms or their ptomaïns in the circulation; the elimination of both excreta and ptomaïns being retarded or prevented either by the simple renal congestion of pregnancy or by any coexisting form of kidney-lesion. If this be a proper statement of our present position, the supreme causative importance of the pregnant uterus as an etiologic factor becomes immediately evident. The uterus as it enlarges interferes in a greater or less degree with the circulation in the abdominal viscera and in the lower extremities. Varices of the rectum and limbs, constipation, vesical irritation, polyuria, albuminuria, are well-marked evidences of the mechanical results due to increased abdominal tension from the enlarging uterus. This congestion is, in the majority of cases, well sustained by the organs during the time of gestation, and disappears, leaving no trace when the fetus is expelled and the uterus returns to its normal size and position. But in a certain percentage of cases, fortunately small, serious consequences remain, especially in the kidneys. These are:

a. In previously healthy kidneys the usual con-

[1] Read before the Kings County Medical Association, December 12, 1893.

gestion may become so severe as to prevent their free action.

b. The kidneys may pass beyond simple congestion into some one of the forms of structural renal lesion.

c. A previously existing nephritis may be aggravated in character and intensity.

It is in some one of these three classes that we find most of our cases of eclampsia. In saying this we have to recognize that there is a certain small group of eclampsias not to be included in such a classification, namely, those classed by Dührssen as "eclampsia reflectoria," in which the symptoms seem to be produced by peripheral irritations acting upon hyperesthetic nerve-centers. But leaving out this small group our original classification holds good and we are forced again to perceive the important relation of the pregnant uterus to the causes of eclampsia. This is further made plain by the fact that in 93 per cent. of eclamptic seizures the symptoms subside upon the removal of the fetus and the contraction of the uterus.

With these points in mind let us proceed to consider, very briefly, the modes of treatment at our command, and their applicability to the conditions which confront us in this class of cases. It will be convenient in discussing the subject of treatment to divide it into two parts: 1. The treatment of cases occurring before the child is viable. 2. The treatment of cases occurring after the child is viable.

Let the first class include all eclampsias occurring up to the end of the sixth month of gestation.

The problem here presented is threefold: 1. The preservation of the mother's life. 2. The retention of the living fetus *in utero*. 3. The relief of the convulsive symptoms and the prevention of their recurrence. Without going into details, as it is my purpose especially to discuss cases coming under the second division of the subject, we may probably best attain these ends by prompt resort to anesthetics and other sedatives, such as chloral and morphin; and then by the use of diuretics and diaphoretics such as hot blankets, hot air baths, pilocarpin, and nitroglycerin. All other remedies failing, rapid dilatation of the cervix and emptying of the uterus are justifiable, but should probably be regarded as a last resort.

Our second class includes those cases occurring between the end of the sixth month and full term. Here the indications to be met are the same as before. But we have now a new factor to deal with, *i. e.*, a living fetus *in utero* capable of continuing its life not only in the uterus, but out of it. The term "viable" as here used is of course relative. Fetal viability varies greatly within the limits of the so-called viable period. It increases rapidly in degree through the eighth month, and more slowly during the first half of the ninth, so that during the last two weeks of gestation the child is almost as well adapted for independent existence as at full term.

Now with this factor of fetal viability added, what is the best solution of the therapeutic problem presented? Along what line may our treatment advance, with the best results to mother and child in the greatest percentage of cases?

The answers to these grave questions cannot be unanimous. No medical question can be answered in that way. But professional opinion, it seems to me, is more and more converging upon prompt induction of labor as the procedure which best meets the conditions of the problem. We need not stop to say that other methods of treatment now in vogue are far from satisfactory. This is universally admitted.

The advantages of this operation are its speed of execution and its effectiveness of action in relieving the eclampsia and in preventing its recurrence.

The objections to it are: 1. Possible destruction of a fetus that might have a chance of life if less radical means were used. 2. Risk of death to the mother either from shock or sepsis. Let us consider these objections in the light of modern statistics and see whether the danger to fetal and maternal life is increased, or whether it is diminished by this procedure.

First as to the maternal mortality from induced labor:

Dr. McLane, in reporting the first thousand deliveries at the Sloane Maternity, notes 12 cases of premature labor for contracted pelvis, with no deaths of mothers.

From the Dresden Clinic there are reports of 45 induced labors with only one death of a mother.

Wyder, of Berlin, notes 306 cases with a maternal mortality of 3.9 per cent.

In his little book on *Practical Midwifery*, Reynolds says: "Prognosis of induced premature labor should differ but little from the prognosis for labor at term, as far as the mother is concerned."

The cause of death in most of the cases quoted is septic poisoning. As these deliveries were performed chiefly for contracted pelvis the danger of sepsis was greater, owing to the unavoidable traumatism and pressure from the instruments; so that with reasonable care statistics should bear out the statement of Reynolds exactly, when the operation is done for eclampsia, when the child is smaller than at term, and the pelvic diameters are normal.

It is fair to say, in view of these facts, that considered merely as a therapeutic agent this operation is hardly more dangerous to the mother than many of the well-accredited drugs which we use with more

or less frequency in eclampsia. Pilocarpin and veratrum, chloroform and morphin, all occasionally claim their victims. Few drugs and fewer operations can be called absolutely safe. So with this operation, it is not devoid of risk, but the risk sinks out of sight in face of the unspeakably greater dangers of the condition we seek to relieve.

Secondly, as to fetal mortality from induced labor. This phase of the question has always been the one upon which opinions have differed most radically, as regards both its medical and its moral aspects. It is upon this side of the question, too, that statistics have been most unfavorable.

But even here, time and careful work and improved technique are doing much to reduce the prohibitive figures of former years. The earlier in the viable period the operation is performed the less satisfactory are the results as regards the life of the child. Tarnier's methods of care for premature children have done much to improve the statistics. He reports a death-rate of 36.4 per cent. in seven-months cases and of 14.3 per cent. in eight-months cases. Of course, these results are obtained in hospitals in which the facilities for caring for the children are of the very best. But I think it can be claimed that a reasonable approximation to these figures may be reached in private practice, if the persons caring for the child are of ordinary intelligence and are properly instructed by the physician.

Then, too, we have to remember that the conditions for which premature labor is induced are in themselves very dangerous to the fetus, as well as to the mother, for whose sake the operation is usually done.

In eclampsia, for instance, children are born dead from asphyxia or other causes connected with the systemic condition of the mother in a very large percentage of cases. Actual statistics on this point seem rather inaccessible, but a comparison of many estimates places the fetal mortality in antepartum eclampsias at about 30 per cent.

And now let us sum up what we have tried to present in favor of induced labor, considered merely as an operative procedure, without reference to its applicability to particular classes of cases. We find it to be:

1. An operation of simple technique which may produce its results rapidly or slowly, as may be desired.

2. An operation whose mortality for the mother is relatively and actually low—little, if any, greater than that of natural labor.

3. An operation whose fetal mortality is actually high, but which progressively lessens as the period of fetal viability approaches full term.

Finally, let us see how the features of this operation square themselves with the therapeutic problems presented in the treatment of eclampsia. By the terms of the operation we exclude consideration of all cases in women less than seven months pregnant, for such an operation before the seventh month is more properly termed an abortion; and we also exclude in the same way cases occurring during or after spontaneous labor. We will consider the applicability of the operation to these cases, first, as a direct remedial measure, and, secondly, as a prophylactic measure.

1. In the presence of eclamptic convulsions delay amounts almost to malpractice. After controlling the reflexes by sedatives our duty, it seems to me, is the immediate use of the most effective and most rapid remedial agent to be had. We have shown that convulsions cease in 93 per cent. of the cases as soon as the uterus is empty. We have shown that the maternal mortality is practically nothing from this operation, which will promptly empty the uterus. We have shown that the fetal mortality of induced labor, while high, is less than the fetal mortality from eclampsia, in all but the earliest part of the viable period. We have shown that the operation is simple and may be completed very rapidly.

These facts seem to demonstrate that the induction of labor is the most efficient and at the same time a reasonably safe operation in these cases.

In view of this demonstration and in view of my own experience, which, while not large, has been terribly instructive; and in view of the experience of a growing number of my professional brethren, I advocate most strongly the immediate induction and termination of labor by means of manual dilatation and extraction of the child by forceps or version. And I wish to be understood as advocating it not as a procedure of last resort but of first resort, a procedure not of necessity but of election.

The difficulty in applying this operation as a prophylactic against eclampsia lies in the vagueness of the premonitory warnings of the approaching convulsions. Most of the important signs of an attack are those which we commonly associate with uremia.

There are many good authorities who consider that induction of labor is not only justifiable but necessary in the presence of edema and albuminuria, which become constantly worse under proper treatment and diet.

Lapthorne Smith (in a note to the *Medical Record* of October 28, 1893) says: "In fact, I have gone so far as to hold that it was our sacred duty to terminate every pregnancy as soon as we discovered that the urine was loaded with albumin, for if we allowed this state of affairs to go on too long the kidneys might become irretrievably injured."

Minor premonitory symptoms, such as frontal headache, epigastric pains, uncertain vision not accompanied by urinary changes, if they do not in themselves constitute an indication for inducing labor, should at least serve to put us on our guard and in readiness to operate at a moment's notice.

Of course, the question of inducing labor as a prophylactic becomes a new question in each case. Only a survey of all the facts can determine for or against it. Prof. T. G. Thomas, in his lectures on Abortion, says: "I would say incidentally that I often induce premature labor, and I regard it as a procedure of the greatest possible importance. With the experience which we now have, it can only be regarded as trifling with a woman's life to allow her to go to full term in cases of aggravated albuminuria from puerperal nephritis."

As to the prophylactic use of this operation my contention is that it is practicable, legitimate, and effective within the limits which we have just laid down.

I am aware that the facts and conclusions I am presenting are not new. With the added weight of great names and great experience they have been stated far more clearly and more powerfully than I can hope to state them. But they have not yet become the fixed law of procedure in the profession at large. Iteration and reiteration is the necessity in promulgating a matter of this kind. And it is in the hope of obtaining for it the weight of your assent and the power of your personal example that I have ventured to open this subject before you for discussion this evening.

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Statements and Facts to which Physicians cannot Testify.—In an action to recover for personal injuries, a physician cannot testify as to statements made to him by the party suing, when the latter calls on him after the suit is brought in order to give him such information as will enable him to testify as an expert at the trial. Neither can he testify as to the nature of an internal injury received six months before, and which has since been healed. So holds the Supreme Court of Errors of Connecticut, in the case of Rowland *vs.* Philadelphia and Baltimore Railroad Company. In this case the witness had been told by the party that his ribs had been broken, but had healed. With regard to this, however, it was held that he could not testify for either of the reasons given.

ORIGINAL LECTURE.

TUMOR OF THE BRAIN SIMULATING A VASCULAR LESION; TO WHICH IS ADDED AN ACCOUNT OF THE AUTOPSY, WITH REMARKS.[1]

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THE case which I wish to study with you to-day is of especial interest, because the most obtrusive symptoms point to an entirely different lesion than the one from which the patient is suffering.

Michael P. K., twenty-seven years of age, of New York, a waiter, single, white, living in Colorado for the past seven years, was admitted into the nervous wards of the hospital about 2.30 P.M. yesterday in a semi-conscious condition. His temperature was 98.4°, the respirations 22, and slightly stertorous when he was not aroused; the pulse full, and 64 per minute. The resident physician does not know whether any paralysis was present at the time of his admission or not, as he did not make any examination to determine the point. During the afternoon, owing to the kind perseverance of the nurse, she succeeded in arousing him sufficiently to get some points in his history. He came of a family of hard drinkers, and he had five brothers, all of whom indulged freely in the use of alcohol. The patient stated that he had always enjoyed good health until about six months ago, when he contracted a severe cold. Since then he has not been very well; at times he has felt all right, and at others he has complained of a numb pain in the head, and a confused sensation, which prevented his thinking connectedly.

It was ascertained from his acquaintances that up to the time of the occurrence of his present trouble he had been occupying a room in a lodging-house, and nothing wrong was noticed by any of the lodgers until yesterday morning, when he arose, apparently as well as usual, and began to dress himself, but before he had completed his toilet he fell to the floor. When found, a short time afterward, he seemed confused and was unable to rise.

At the time of my first visit, at 8 P.M., a few hours after his admission into the hospital, he was lying quietly and sleeping, but his respiration was slightly noisy when left to himself. His temperature was normal, and equal in each axilla, the pulse 72, and rather full and strong. He was easily aroused from his stuporous sleep, and for a few moments seemed to realize what was said to him; but if left alone, he immediately relapsed into an apparently unconscious condition. His left arm and leg were almost completely paralyzed; the face was apparently unaffected, and he protruded the tongue in the median line. Sensation seemed to be normal. The right knee-jerk was slightly increased; the left a little greater than the right. The plantar reflexes were absent, and no ankle-clonus could be elicited. The cremaster and abdominal

[1] A Clinical Lecture delivered at the Arapahoe County Hospital, Denver, Col.

reflexes were slight on the right side and absent on the left. The pupils were equal and widely dilated, but reacted slightly to light. There was no paralysis or paresis of the external ocular muscles. On examining the fundi of the eyes a condition of bilateral optic neuritis was found. The disc was more swollen in the right eye than in the left, but the latter had reached a more advanced stage, and presented distinct atrophy of the optic nerve, with arteries very small. The other special senses, so far as I was able to determine, were normal. The urine was free from albumin and sugar, and the lungs seemed to be in a normal condition. Headache was not complained of unless the man was aroused and asked about it, when he would say that his head pained, but his appearance did not indicate much suffering. His bowels were freely evacuated, and he slept during the night, unaided by a hypnotic.

His stuporous condition has deepened since my visit last night, and I have brought the patient before you to-day so that we may study his condition together, hoping that I may be able to bring out some points in connection with this case which may aid you, even in the absence of a history, in dealing with persons found in a state of partial or complete unconsciousness.

On reëxamining our patient to-day we find him in a condition very much the same as that in which I found him at my first visit some sixteen hours ago, with these exceptions: that the paralysis of the left arm and leg has deepened, so that their muscles are now nearly flaccid; that the left side of the face, from the nose downward, is slightly paretic; and that the state of stupor is rapidly passing into coma. You see that I cannot get any intelligent response from him. When I call to him he simply opens his eyes and moves his lips, and immediately sinks into a condition of blissful unconsciousness of his impending fate.

You must remember that a condition of partial or complete unconsciousness may be produced by syncope, from heart-failure; by chloral, opium, or alcohol poisoning; by uremia, epilepsy, or hysteria; or by an apoplectic state caused by apoplectiform attacks occurring in cerebral congestion or paralysis of the insane; by "simple apoplexy" in the aged, or by apoplexy from embolism, thrombosis, abscess, cerebral hemorrhage, or tumor of the brain.

You see, then, that we may have a more or less sudden disturbance of consciousness, from perversion of brain-function, and that this may be due either to direct or indirect causes acting upon the brain. In some cases of suddenly induced unconsciousness, even from structural brain-disease, there are but slight, if any, localizing symptoms, so that, in the absence of a consecutive and reliable history, you may at times be sorely puzzled to determine the cause of the unconsciousness. When persistent paralysis exists, especially if it is associated with optic neuritis, all such general causes of unconsciousness as syncope from heart-failure, chloral, opium, alcohol, and uremic (?) poisoning may be excluded. The bilateral optic neuritis, excluding lead-poisoning, uremia, and profound anemia, is positive proof that the trouble is organic, and therefore hysterical and epileptic coma, as well as "simple apoplexy," may be disregarded in the diagnosis of the lesion in the patient before us.

Having excluded all causes, except those of an organic nature, to which of the numerous organic brain-lesions may we attribute this man's condition?

For diagnostic purposes, these lesions may be divided, as regards the time consumed in their development, into sudden, acute, and chronic.

The sudden lesions are vascular in their nature, and are due to embolism, thrombosis, or cerebral hemorrhage. You must all realize the importance of a consecutive and reliable history of the patient prior to the development of the prominent symptoms of the disease, and an intelligent account of the mode of invasion of the disease. In the absence of such a history it is sometimes utterly impossible to make a diagnosis. With the light which a reliable history throws on a case, positiveness in differential diagnosis may be obtained by careful analysis and comparison of all the symptoms. Unfortunately, in the history of the present case, the information is meager, and it is questionable to what extent it may be relied upon. Prior to the development of the paralysis yesterday morning but little is known, except that for the past few months the man found it difficult to think, owing to what he called a confused feeling in his head. Pain in the head was only complained of as a heavy sensation. When I first saw him he made so many contradictory statements that I was unable to learn whether he had ever had syphilis. He was not seen until several minutes after he fell on the floor while dressing in the morning, and when found he was unable to rise and seemed stupid. He could give no account of this attack. It is fair to presume that the paralytic symptoms and mental confusion came on comparatively suddenly, although we must bear in mind that he might have gotten out of bed with impaired motility and mental power, and that these simply increased while he was trying to dress himself. In embolism there are usually no head-symptoms antedating the attack, and to justify the diagnosis of cerebral embolism we should be able to find a cause for the embolus, such as acute or chronic endocardial trouble. No such cause exists in this patient. In rare instances embolism gives rise to optic neuritis, but it is evident that this could not occur until several days had elapsed after the occurrence of the brain-lesion, so that we can exclude embolism in this case. Without going into a detailed account of the symptoms of thrombosis and cerebral hemorrhage, a consideration of these may be discarded in the diagnosis of our patient's trouble, as insufficient to account for the presence of optic neuritis, which does not arise from either of these vascular lesions.

You see, then, that a sudden or vascular lesion, although the paralytic attack was undoubtedly more or less sudden in its onset, will not account for all the symptoms which this man presents; I wish you to bear in mind, however, that while a vascular lesion will not account for all the symptoms, it would account for the rapid development of paralysis, and such a lesion may occur as a result of a more chronic malady and give rise to sudden symptoms, thus making a diagnosis, in the absence of a reliable history, exceedingly difficult. Of this I may have something to say later, in explanation of some of the symptoms presented by our patient.

The acute lesions of the brain are inflammatory in their

nature, and require from a few days to a week or more to reach their height. They are all, as a rule, attended with some rise of temperature and considerable headache. Whilst optic neuritis may appear early (fifth day, Gowers), atrophy, such as is found in the present case, is not seen until after the second week. So that normal temperature, absence of marked head-pain, the sudden onset of the main symptoms, a few hours ago, and the presence of optic neuritis, with beginning atrophy, enable us to exclude the acute organic brain-lesions.

We have left, to account for our patient's condition, which seemed on superficial observation to be due to some sudden lesion, one of the chronic organic brain-diseases. We can exclude the scleroses, and in the light of what history was obtainable at the time of the patient's admission into the hospital, together with the symptoms found on examination, we need to consider only two lesions, viz., tumor and chronic abscess.

The diagnosis between tumor and acute abscess of the brain is usually easy, but between tumor and chronic abscess it is sometimes most difficult, if not impossible, especially if we find ourselves laboring under the difficulties encountered in the present case, in which a reliable history and accurate observation of symptoms, prior to the sudden development of the apoplectic symptoms, are entirely wanting.

In chronic abscess there is usually the history of a cause of suppuration, such as chronic ear-disease, infective disease of the nose or of the bones of the skull, or suppuration in the lungs or elsewhere. In abscess of the brain one of these causes is found in about three-fourths of the cases. After the first disturbance, caused by the formation of pus, a latent period of several weeks, months, or years may follow, during which the patient may complain of slight or no brain-symptoms. The latent period is sometimes cut short suddenly by terminal symptoms resembling apoplexy, such as paralysis, convulsions, coma, and death.

Most tumors of the brain run a gradually increasing course, with decided head-symptoms, without a latent period, and with final symptoms in accord with the previous history of increasing gross organic brain-lesion. But we must remember that gradually-growing tumors in a portion of the brain, the destruction of which gives rise to no definite focal symptoms, may run a comparatively latent course, and finally bloodvessels may be encroached upon and occluded, giving rise to symptoms resembling thrombotic apoplexy. Again, in the course of tumor of the brain we may have the occurrence of a vascular lesion, in every way independent of the morbid growth. One such case was observed by me in this hospital about a year ago. The patient was suffering from a slowly-growing tumor attached to the dura on the right side of the brain, and a large hemorrhage occurred into the left corpus striatum and proved fatal in a few hours. The autopsy revealed advanced degeneration of all the large arteries at the base of the brain. The hemorrhage that sometimes occurs in the substance of vascular tumors rarely proves fatal.

Finally hemiplegia may occur in the course of brain-tumor, and death result; and the autopsy may afford no explanation of the suddenly-developed symptoms. Some years ago, Gowers (*Brain*, 1879, vol. i, p. 48) reported a number of cases of sudden paralysis occurring in the course of cerebral tumor.

The points in the case of the patient before us in favor of chronic abscess are: excluding a vascular lesion, as we have done already, terminal symptoms resembling apoplexy in a case of latent chronic brain-trouble, and optic neuritis.

Evidences in favor of tumor rather than abscess are: absence of a cause for the development of abscess (this is always a strong point against abscess); intense optic neuritis, as evidenced by considerable swelling of the right optic disc, and absence of rigor and fever, which so commonly attend the terminal stage of chronic abscess. All these symptoms, except optic neuritis, are negative ones in favor of tumor, but very positive against abscess.

The weight of the evidence is in favor of tumor of the brain, and I venture this diagnosis in view of the probability of being able to verify or disprove it by an autopsy in a few hours or days.

I wish to call your attention to the fact that, outside of gross organic brain-disease, renal trouble, lead-poisoning, and profound anemia will give rise to optic neuritis, but it has not been necessary to consider these, because of the positive evidence of a brain-lesion to account for the patient's condition, although, as a matter of fact, the urine is free from albumin, there are no evidences of chronic lead-poisoning, and the patient is not anemic.

Having made the diagnosis of tumor, is it possible in the present case to localize it? The base of the brain can be excluded, from the fact that the cranial nerves have not been affected; and the cortex of the convex surface is probably not the seat of the growth, in the absence of convulsions; and a growth in the cerebellum would not give rise to distinct hemiplegic symptoms, without interfering with the functions of the medulla or pons. In all these situations headache would probably have been a prominent symptom, and you remember that, on the patient's admission into the hospital, he stated that he had not suffered much from head-pain.

Excluding, then, these situations as the probable seat of the growth, we have left the centrum ovale in the right hemisphere. The growth did not have its origin in that portion of the centrum ovale occupied by the fibers of the corona radiata which connect the anterior two-thirds of the posterior half of the internal capsule with the cortical motor region, else paralysis would have been an early, instead of a late, symptom. The tumor has had its origin either anteriorly or posteriorly to the radiating fibers of the motor region, and these fibers have been encroached upon by a sudden extension of the morbid process to them. Whether the disease began anteriorly or posteriorly to the fibers of the motor region is not an easy matter to determine—especially so in the absence of a complete history. We learn that there was some difficulty in mental concentration for months, but this was not sufficiently marked to attract the attention of the man's friends. Lesions in the centrum ovale posterior to the radiating fibers passing to the motor region might run an almost completely latent course, but when the anterior lobe of the brain is the seat of tumor we should expect to find mental disturbance, such as apathy, inability to concentrate the mind, with,

probably, more or less moral obtuseness. In the present case, in the absence of a reliable history, I must confess that I am unable to make a more definite diagnosis as to localization than the centrum ovale of the right hemisphere.

In regard to the treatment of the present case little or nothing can be done. The patient is now comatose and he will not live more than a few hours, or a day or two at the most. It is too late to attempt to get the effects of medicine, and were we sure as to the exact location of the morbid process, the physical depression is too great to justify an effort for its removal by surgical means. I shall not discuss at length the probable nature of the tumor, but it is most likely syphilitic or gliomatous; although, as the patient dated the beginning of ill-health from a "cold on the lungs," it may be tuberculous. I will report further on this case at our next clinic.

(After the lecture the patient continued to sink into a deeper state of coma and died about twelve hours later.)

At the autopsy, made ten hours after death, by Dr. Axtell, in the presence of Drs. McLauthlin, Mack, and Hull, and myself, the brain only was examined. No abnormally firm adhesions of the dura to the bone existed. The sinuses and the veins of the dura were distended with dark, fluid blood. No clots were found.

The veins of the pia were everywhere filled with dark, fluid blood. There were no signs of inflammation of any of the membranes, and the pia readily stripped from the brain. The arteries at the base were empty and showed no evidence of disease. The left cerebral hemisphere appeared normal throughout. The centrum ovale of the right hemisphere, from near its posterior portion in the occipital lobe to a point opposite the middle of the fissure of Rolando, showed evidence of disease. This entire area was occupied externally by what appeared to be ragged brain-substance, some portions of which were softer than the normal brain-tissue, whilst others presented an increased resistance to the finger. The parts anteriorly and internally (toward the lateral ventricle) appeared quite soft. In the interior of this tumor-like mass was found, in one portion, one or two ounces of yellow, watery fluid, and in another, which was separated from the cavity containing the watery fluid by a portion of the growth, a sanguino-purulent gummy-looking material. Considerable of the yellowish, watery fluid was found in the right lateral ventricle. It is impossible to say whether this found its way there before death or during the dissection. Great care was used in examining the brain, yet, on account of the fluctuating condition of the whole of the posterior portion of the right cerebral hemisphere, a rupture of the wall of the lateral ventricle could easily have taken place. None of the fluid had gravitated to the fourth ventricle, making it probable that the fluid had escaped into the lateral ventricle during the dissection.

A microscopic examination was made by Dr. Axtell, whose report is appended.

The softened material surrounding the cavity containing the fluid showed nothing but granulation-tissue; no connective-tissue elements were found; leukocytes and red blood-corpuscles were found in abundance. It was simply softened, broken-down brain-substance.

Of the gummatous substance, a large amount of granular material, composed principally of granular leukocytes, and containing numerous red blood-corpuscles, was found. The hardened portion of the brain-substance posterior to the semi-liquid material showed the usual appearance of gummatous infiltration.

With the additional light which the autopsy revealed in the foregoing case, a few points can be more intelligently discussed now than during the patient's life. What was the cause of the sudden and grave symptoms and the speedy death? What part did suppuration play in this man's case; was it primary or secondary? Do not syphilitic growths infiltrate the surrounding brain-tissue?

It seems to me that the extensive softening and hemorrhagic infiltration, which were undoubtedly of recent date, prior to the syphilitic growth, and involving the coronal fibers going from the internal capsule to the motor region of the brain, were sufficient to account for the sudden paralysis. It is probable that the liquid material, which, before the sudden breaking down of the brain prior to the syphilitic growth, had been enclosed in a circumscribed cavity, after the softening was allowed greater freedom of motion, and thus, by its pressure on the external wall of the lateral ventricle and on the great ganglia at the base, added to the shock already set up by hemorrhagic infiltration and brain-softening.

After the man's death it was learned that he had been under treatment for a number of weeks for supposed syphilis of the brain, prior to his admission into the hospital, and had taken potassium iodid during this time. The treatment accounts for the yellowish liquid found in the interior of the growth. I have observed, post-mortem, several cases of syphilitic tumor which had been treated by potassium iodid, and in most of these, especially when large doses of the medicine had been used, a considerable amount of a straw-colored watery fluid has been found. I have not seen this state of affairs in cases that have not received anti-syphilitic treatment.

What part did the suppuration play in this man's case; was it primary or secondary? So evident were the characteristics of pus found at the autopsy, that at first I was inclined to regard the case as one of chronic abscess; but the induration of portions of the surrounding brain-substance and the microscopic examination both showed the presence of a growth; besides, the pus was not of the distinct greenish color so commonly met with in abscess of the brain. Moreover, there was no odor to the pus-appearing substance. Since, then, it is not likely the formation of pus antedated the growth, it must have been secondary to it and in all probability due to the destructive process of the rapidly growing tumor. This is the first case of tumor of the brain in connection with which I have found pus. I see no reason, however, why we should not have the formation of aseptic pus from the acute softening that may take place as the result of blocking up of blood-vessels from the encroachment of a growing tumor.

The third and last question that I will consider is: Do not syphilitic growths infiltrate the surrounding brain-tissue? Gowers, in the second edition of his *Diseases of the Nervous System*, vol. ii, p. 493, under the heading "Syphilitic Growths," says: "The adjacent brain-substance is softened and more or less displaced, but it is not infiltrated by the growth."

On the other hand, Bramwell, in his work on *Intracranial Tumors*, p. 216, in quoting from Heubner on the appearances of syphilitic growths of the brain, says: "This form of tumor is never sharply defined; on examining the edges by the microscope, one may see at points apparently normal a strongly-marked cellular infiltration, which gradually passes into the healthy tissue."

Ziegler, *Special Pathological Anatomy*, sect. ix–xii, p. 311, beautifully illustrates diffuse cellular infiltration (syphilitic) of the cortical substance of the brain in a case of gummatous syphilitic meningo-encephalitis, and on page 312, after describing, in connection with this illustration, the tendency of syphilis of the membranes to involve the adjacent brain-substance, he states: "The same holds for the nodes which develop independently in the substance of the brain and cord."

Delafield and Prudden, in their work on *Pathological Anatomy and Histology*, in speaking of gummy tumors, to which they devote but a few lines, only refer to coagulation-necrosis and degeneration as taking place in the surrounding tissue.

In a case of syphilitic growth of the brain, operated on for me by Dr. Parkhill about two years ago, in a man about thirty years of age, a cavity containing about four ounces of a yellowish, watery fluid was found, and microscopically the brain-substance was indurated and softened around this cavity for some distance, making the size of the growth, from naked-eye appearances, four and a half inches in its longest dimensions, by three and a half and three inches in its shorter. The hemisphere of the brain from which this tumor was taken at the autopsy was examined by a competent microscopist and found to be infiltrated with gummatous tissue around the growth, even in portions which appeared macroscopically to be normal.

It seems to me that since surgical operative procedure is recommended for the removal of syphilitic growths, it is of the first importance to recognize the fact that these growths affect the surrounding brain-tissue, both by necrotic softening and gummatous infiltration, and that in many cases of long-standing tumors of this nature the brain-tissue has been so extensively infiltrated that but little or no good results can be reasonably expected after the excision of the old tumor-mass. I believe that Mr. Victor Horsley is right in urging early operation for the removal of syphilitic growths, if symptoms do not rapidly disappear under vigorous anti-syphilitic treatment.

CLINICAL MEMORANDA.

CASES OF LAMINECTOMY FOR SPINAL FRACTURE.

BY JOHN B. ROBERTS, A.M., M.D.,
OF PHILADELPHIA;
PROFESSOR OF SURGERY IN THE WOMEN'S MEDICAL COLLEGE AND IN THE PHILADELPHIA POLYCLINIC.

THE hopelessness of laminectomy for old vertebral fracture is well shown in the following cases, and in suspected fracture of the spine should serve to enforce upon us the vital importance of immediate operation for removing the displaced bone. While it is true that the damage to the cord and its membranes usually occurs at the instant the bodies or vertebral arches are broken, it must be remembered that the possibility of restoring function and limiting secondary inflammations and degenerations rapidly decreases with time. Hence the surgeon should operate as promptly in spinal fracture as in cranial fracture.

When there is doubt as to the existence of spinal fracture or dislocation it is good surgery to make an exploratory incision. If no osseous lesion is present such an operation performed aseptically will add little risk to the patient's life. If such lesion is present, prompt removal of pressure upon the cord holds out the only chance for restoration of its function. Often the damage to the nervous structures will be irreparable, but the patient has at least been given a chance. The risk, from hemorrhage (always severe in laminectomy) and from operative shock added to the shock of injury, will nearly always be justified by the danger to life and physical usefulness inherent in the original traumatism.

I am a believer in operation, even in cases of old fracture, because it offers the only possibility of effecting benefit. If aseptic it is accompanied by but a moderate risk to the patient's life. Unless it is performed the surgeon has failed to give the patient the benefit of every possible chance. Of recent articles on this subject, that of Dr. A. M. Phelps in the *Journal of Nervous and Mental Disease* for July, 1893, will be found interesting. I record the histories of a few cases.

FRACTURE OF THE SPINE IN THE DORSO-LUMBAR REGION SUBJECTED TO LAMINECTOMY THREE TIMES; NO IMPROVEMENT IN SYMPTOMS.

A man aged thirty-one, residing in Massachusetts, fell a distance of twenty-four feet in December, 1891. He states that he struck upon his heels and then upon the sacral portion of the back, which came in contact with railroad ties. I am indebted to Dr. C. C. Laffer for the following notes, taken from the records of the Methodist Hospital, where he was admitted in October, 1893.

The fall was immediately followed by loss of power and sensation in the lower limbs and of the body up to the level of the crest of the ilium, with loss of the control of the bladder and bowels. The contusion of the soft parts of the back was followed by a bedsore, which later healed.

Six weeks after the injury, twitching of the muscles of the toes was noticed, which later became manifest throughout the entire leg. Five months after the injury the man was operated upon, and laminectomy of the ninth and tenth dorsal vertebræ performed. Some depressed fragments of bone were removed. The cord was compressed into a narrow band and crowded forward; the cord appeared healthy, but the membranes were not opened.

After the operation the patient regained some sensation in the testicles, which he still retains. A second operation was performed five months later, the site being in the lumbar region. No bone was discovered pressing on the cord. After this second operation there was improvement in the condition of the legs, which previous to the operation were covered with bedsores. At the present time the patient feels well, has a good

appetite, digests food well, sleeps well, but is constipated. Urinalysis showed a dark-reddish color of the urine, a heavy yellow precipitate, an ammoniacal odor, an alkaline reaction, and a specific gravity of 1021, without albumin or sugar. Phosphates, pus, blood, and epithelium were found present.

There was complete loss of power and sensation in the lower limbs, the penis, scrotum, buttocks, and body up to the level of iliac crests, except over the center of the abdomen (where sensation was good four inches below the umbilicus) and over the spinal column in a space two inches broad, extending about two inches down on the sacrum. The skin of the legs and feet was smooth and shiny, and that of the thighs in good condition, the whole of the limbs being warm. There was some edema. The toes were kept in the position of flexion; the ankle-joints were immovable, but the knees could be passively bent. The knee-jerk on both sides was much exaggerated. The clonus was marked. The scrotal reflex was obtainable from the abdomen. The skin was abraded over the metatarso-phalangeal joints of both great toes. There was a bedsore over the sacrum a little to the left of the median line, a scar of an old sore on the right side, also scars of incisions of former operations in the lumbar region. Some spinal deformity was seen just above the cicatrix of the previous operations.

The patient's condition showed very little change while I kept him under observation for a few weeks. The bladder was irrigated daily with boric acid solution, and the condition of the urine became better. The bedsores looked better, as the sloughs had been thrown off and granulations were present.

On November 7, 1893, I made an incision over the spinous processes of the vertebræ in the lower dorsal and upper lumbar region. The spinous processes of the eleventh and twelfth dorsal vertebræ and of the first lumbar vertebra were cut off, and the laminæ of the same vertebræ were partially removed. The cord and membranes were exposed. The latter were opened; the lower end of the cord seemed to be healthy, but the cauda equina was displaced and was evidently the seat of an old injury. Some cerebro-spinal fluid escaped. There seemed to be an angular displacement of the cord at the dorso-lumbar junction, which disappeared when the bone was removed. The former operations had evidently been in the region of the second and third lumbar vertebræ and a bony ridge had replaced the laminæ removed; this was cut away. I was willing to operate, because the appearance of the spine seemed to show that the whole area of displaced bone had not been removed. At the operation I found that the prominence of the first lumbar spine was largely, if not wholly due to the previous removal of the spinous processes below. The wound was closed with buried catgut and superficial silk sutures, and dressed with iodoform-collodion and gauze. The patient recovered fairly well from the ether and had an uneventful convalescence.

There seems (January, 1894) to be perhaps a little more mobility of the ankle, tarsal, and metatarsal joints, but otherwise the condition of the patient does not differ from that before the operation. His general health is good.

DORSAL LAMINECTOMY FOR FRACTURE OF THE VERTEBRÆ; NO IMPROVEMENT; DEATH FROM BEDSORES.

A man, aged twenty-two years, came under my care on May 23, 1892, for fracture of the spine. He was engaged in a lumber camp, and, as a heavy tree began to fall, he started to run from it. He was struck and felt as if his feet were caught. He was not unconscious, but was somewhat stunned. He was not actually caught under the tree, and the peculiar sensation which he noticed in his feet was probably due to an instantaneous paralysis. He was paralyzed in both legs and soon had the ordinary involuntary evacuations of urine and feces that occur after such injuries. The accident had occurred one year before the patient came to me for treatment, during which time bedsores had formed in the sacral region and on the hips. Sensation and movement below the navel were lost.

On June 16, 1892, laminectomy was performed at the seat of deformity in the dorsal region. The cord was found to be compressed by portions of bone, which were removed. Some days after the operation it was thought that there was some gain of muscular power, for the patient could slightly move his legs at the hip-joints. This appeared to be due to voluntary contraction of the psoas and iliac muscles. It is probable that he had had the same amount of control before the operation, but that it had not been observed. The wound, which had been closed with catgut introduced for drainage, remained aseptic. The catgut sutures, however, became absorbed before union was completed, and the wound gaped, showing an aseptic partially-organized blood-clot filling the wound. The lips of the wound were then brought together with silkworm-gut and gradually became entirely healed without suppuration. Five weeks after operation the patient died with symptoms of sepsis, which was probably due to the large bedsores which occurred on both hips. No autopsy was made.

DORSO-LUMBAR LAMINECTOMY FOR OLD FRACTURE OF THE SPINE, FOLLOWED BY HEMATURIA; NO IMPROVEMENT IN PARALYTIC SYMPTOMS.

A man, aged thirty-seven years, while driving a team under a lumber track, which was not high enough to permit him to maintain the upright position, stooped forward to go under the obstruction. Even in this position he was too high and was caught by the beams overhead and forcibly bent backward, sustaining an injury to the spinal column in the region of the last dorsal vertebra. He became paraplegic at once, and a physician of the neighborhood made an incision over the point of deformity in the spine, but apparently did not perform any operation upon the bones of the vertebral column. About five months and a half later he was brought to Philadelphia and put under my care. The patient was completely paralyzed as to motion and sensation in the lower part of the trunk and in both legs. There was incontinence of urine and feces.

A few days after admission the patient passed a small urinary calculus. His urine was of a high specific gravity and contained pus, mucus, and phosphates, showing the presence of cystitis.

On April 22, 1893, I made an incision four and a half inches long in the median line, exposing the

spinous processes of the eleventh and twelfth dorsal, and first, second, and third lumbar vertebræ. By means of a chisel and gnawing-forceps I removed the arches and spinous processes of the twelfth dorsal and first and second lumbar vertebræ. In this situation the dura was flattened and contained little if any cord-substance for about an inch and a half. There had apparently been a fracture involving the bodies, as pieces of bone or callus were found in the spinal canal. The dural sheath was opened and the cord found uninjured above and below. I made an attempt to bring the two ends of the damaged medulla together, in order that I might suture the upper and lower portions of the cord with catgut. The amount of cord which had been destroyed from the effects of the traumatism was so great that approximation was impossible. The edges of the wound were brought together across the gap left in the bony canal and a dressing of iodoform and collodion applied. A good deal of shock was shown, and the patient had a chill. Strychnin, digitalis, and nitroglycerin were employed and the patient gradually reacted. The day after the operation the patient had retention of urine, although before the operation there was constant incontinence of urine. By the catheter twelve ounces of bloody urine were withdrawn. This hematuria lasted for several days, and the urine had to be drawn on a number of occasions. Gradually the urine became free from blood and the incontinence returned. Two weeks later the patient was sent home into the country in a pretty weak condition, with a temperature above normal. His desire was so great to go home that I permitted him to leave, even though he was not strong.

Five months after the operation he was still living, but his paraplegic symptoms were unimproved. The operation, therefore, has been of no service, but was satisfactory in that it gave him and his friends the comfort of knowing that everything had been done that was possible in the way of surgical relief. For this they were grateful.

LAMINECTOMY FOR FRACTURE OF THE SPINE OF TEN MONTHS' DURATION; NO IMPROVEMENT; DEATH TWO MONTHS LATER.

Dr. L. W. Steinbach has given me permission to report the following case, which he kindly permitted me to see at the time of operation. In April, 1892, the patient, a man of twenty-five years, was caught by falling coal in a mine, sustaining a fracture in the lower dorsal region, with immediate and complete paralysis of both legs. For two months after the injury there was some blood mixed with the urine, which had to be drawn with a catheter. At the time of the operation he had control of the bladder and also of the rectum. His bowels were, however, constipated. On October 27, 1892, Dr. Steinbach operated, making a six-inch incision over the spinous processes of the lower dorsal and upper lumbar vertebræ. The laminæ and spinous processes of the eleventh and twelfth dorsal and of the first lumbar vertebræ were cut away. Upon reaching the spinal canal it was discovered that from two and a half to three inches of the cord were either destroyed or flattened against the vertebral bodies, forming a mere band within the membranes. The membranes, however, were not opened; for at the time of operation it was supposed that neither cord nor membranes remained in this area. The body of the eleventh dorsal vertebra was an irregular mass, as if fracture had taken place at this spot. The patient lost control of his bladder for a few days after the operation and had to be catheterized. He had three attacks of epistaxis. Some days later he regained control of the bladder. The wound healed promptly, but bedsores began to develop in spite of great attention. His temperature gradually began to rise and he died on December 22d. No improvement was obtained by the operation.

GOLD-FOIL IN THE SHAPE OF A CONICAL CUP INTRODUCED INTO A LACERATED CAVITY OF THE CEREBRUM FOR THE PURPOSE OF PERMANENTLY STOPPING THE OUTFLOW OF CEREBRAL TISSUE AND CLOSING A HOLE IN THE MEMBRANES.

BY W. L. ESTES, A.M., M.D.,
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IT occasionally happens that the exigencies of "acute surgery" bring one to the adoption of a procedure or device not recommended by the "books," but which may serve to establish new lines of practice by demonstrating an unthought-of tolerance of foreign bodies on the part of the living tissues, or suggesting similar attempts to other surgeons. Fluhrer's case of gunshot wound of the cerebrum, with successful localization of the ball by probing through the whole diameter of the brain, gave a new impetus to cerebral surgery that has led to wonderful results. The following case is therefore related as a unique example, so far as I am aware, of plugging the cerebrum *permanently*, with a most happy immediate result and complete and rapid recovery of the patient.

Cornelius B., a negro, twenty-eight years of age, was brought to the hospital in an unconscious condition on the night of April 4, 1893. The Ambulance Surgeon was told that while the patient, with a companion, was out driving, Cornelius, by what means or agency could not be discovered, was thrown to the ground and kicked by the horse, becoming immediately unconscious. He was forthwith taken in charge by his companion and sent by railroad a distance of some twenty odd miles, and finally was received at the hospital, still unconscious, three or four hours after the injury. No dressing or covering of any sort had been placed over the wound. Examination showed no injury anywhere, not even an apparent bruise, except on the right side of his head, where there was a *punched-out* sort of wound through the scalp and the bone and deep into the cranial cavity. The location of this wound was 6.5 centimeters above the external auditory meatus and 2 centimeters in front of a line perpendicular to the external auditory meatus; it was 5.5 centimeters behind and 3.5 centimeters above the external angle of the frontal bone. The wound in the scalp was round, but a laceration extended backward about 3 centimeters. The surrounding scalp was not lacerated or contused. Hemorrhage had entirely ceased and had not been profuse. The man's general condition was

good. Although he was unconscious, enough reflex remained to cause him to move about when the wound was manipulated. After shaving and carefully cleansing and disinfecting his head, he was chloroformed, the external or scalp wound was enlarged and the bone freely exposed. It was found that the depressed fracture of the bone involved an area of a little less than 2 centimeters, and that all of this bone was driven down, at almost a right angle to the cranium, into the cerebrum; so that there was a sharply-defined rim of bone, with some radiating linear fractures, and about 3 centimeters beneath, from the inner table of the cranium, the comminuted fragments lay imbedded in the cerebrum. Outside of this bone the scalp had also been punched out and the fragment was lost. The opening in the bone was enlarged and by careful manipulation the fragments were lifted out of the cerebrum with a pair of narrow forceps. A few spiculæ were so small and sharp and deeply imbedded that much care was required to locate and remove them. When the fragments were finally removed free hemorrhage took place from the cerebrum, but was checked by plugging the cavity with iodoformized gauze. Something like 15 cubic centimeters of lacerated cerebral tissue were washed away with a gentle stream of warm sterilized saline solution. The dura was lacerated to shreds and it was quite impossible to close the gap in the membrane. I concluded to pack the whole cavity with iodoformized gauze, and, by careful asepsis, endeavor to obtain healing by granulation. Accordingly, a careful dressing, with an outside pressure bandage was applied and the patient put to bed. He stood the operation very well, reacted quickly, and under morphin passed a quiet night. The next day he was quite conscious, answered questions readily, and had no paralysis. There had been considerable oozing and the dressings were saturated with blood. I changed the dressings. In spite of the greatest care there was an escape of more cerebral tissue, and as there was no membrane or scalp to help retain it I saw I should have trouble to prevent the escape of brain-tissue whenever I dressed the wound, and every prospect of a final hernia cerebri. I replugged and redressed the wound as before and concluded to wait a day or two. I recollected, in thinking over the matter, that Weir had recently used gold-foil to prevent adhesions between the dura and cranium and scalp, and had found it non-irritating, and that rapid and permanent healing occurred in his cases. My problem, however, was more complicated. I had to control the oozing of the cerebral tissue into a cavity and prevent its detachment and escape on account of a complete loss of all its envelopes. I concluded to try a sterilized cup made of heavy gold-foil fitted down into the cavity of the cerebrum.

On April 7th, two days after the injury, I again had the patient chloroformed, and getting the dimensions of the hole in the cranium I fashioned a cup from the gold-foil (which had been sterilized by immersion in a 5 per cent. solution of carbolic acid and then washed off in a warm sterilized saline solution, 0.5 per cent. solution of sodium chlorid) into the shape of a hollow cone, with the base just big enough to fit closely to the inner rim of the inner table of the cranial wound and with a depth of about 2 centimeters. The plugs were removed from the cerebral cavity, with again considerable escape of brain-matter, which was washed out by a gentle stream of the warm sterilized saline solution and the cup immediately introduced, apex downward. I fastened it in place by pressing the foil into the indentations and irregularities of the rim of the inner table and packed loosely into the cup some iodoformized gauze. I incised and loosened the scalp on either side of the wound so that I could slide it over and cover in the opening, sutured it, except a small space in the center through which an end of the bit of iodoformized gauze was allowed to project, and dressed it as before.

On April 14th the wound was redressed, the sutures removed and also the packing of gauze from the cavity of the gold cup. The wound was perfectly aseptic, the cup firmly fixed and in place, and there was no bulging and absolutely no escape of brain-matter. A small bit of gauze was again introduced into the cup to give it solidity, and the dressings were reapplied.

On April 27th the wound was again inspected. There had been no suppuration, and the wound was entirely closed except where the bit of gauze projected from the cup. This was removed and the external wound was allowed to come together. In a few days this was entirely and solidly united. The patient was allowed to be up and about. His faculties were all good, locomotion was good, and in short he showed no indication in any way of having lost any function; nor were there any signs of irritation from the cup. I kept him about two weeks, employed most of the time about the wards, doing the work of an orderly, that I might observe him and examine the seat of wound. There was absolutely no indication of any trouble or disturbance. He was discharged quite well May 20th. The wound was firmly united and there was no pulsation perceptible through the opening in the cranium.

THERAPEUTIC NOTES.

THE THERAPEUTIC USES OF THE SALTS OF CESIUM AND RUBIDIUM.

BY THEODORE W. SCHAEFER, M.D.,
OF KANSAS CITY, MO.

IN the years 1860 and 1861 Bunsen and Kirchhoff, by means of their memorable four-prism spectroscope (which, by the way, was on exhibition at the recent World's Fair in Chicago), discovered the two alkali-metals, cesium and rubidium, while examining the waters of Duerkheim, Germany. Together with others, they succeeded in finding these alkali-metals in many waters, soils, plants, and in the animal system. Further spectrum observations showed even traces of rubidium and cesium in the blood of man, demonstrating the fact that they are widely diffused in Nature, although in minute quantities.

Lucanus experimented with cesium and rubidium upon the growth of plants and claimed that the latter do not absorb the salts of these metals and that they act inimically upon them, but repeated experiments in recent years have shown the fallacy of his claims. In 1864 Claude Bernard, the celebrated French physiologist, experimented with the salts of rubidium and demonstrated that they are less toxic to the cardiac apparatus than the preparations of potassium.

Cesium is the most electro-positive of the elements. Rubidium, its partner, comes next. Cesium and fluorin should be considered as chemic "ideals," because of their prominent chemic and physical characteristics. Fluorin, as I have elsewhere pointed out, is the most electro-negative member of the elements, whilst cesium is the most electro-positive. The chemic, physical, and physiologic activities of cesium and rubidium rank higher than those of potassium, sodium, or the other members of the alkali-group. The presence of cesium and rubidium in plants and in the animal organism must certainly serve a purpose. Just as fluorin, in its electro-negative functions and chemic affinities, is an inherently associated member of the halogens, so does cesium behave as a member of the alkali-metals in its chemic functions and electro-positive activity. The researches of physiologic chemistry teach that substances having allied properties must have also analogous actions upon the organism, and the difference of their modes of action can be explained on chemic principles.

My uncle, Dr. Edward Wernigk, once assistant of Prof. Bunsen, experimented as early as 1876 with cesium and rubidium upon his body. He again repeated these experiments on his own person in 1880, using cesium bitartrate. He believed that cesium and its salts acted favorably upon his heart, as he was suffering from a cardiac neurosis. It also acted favorably upon the generative organs. He assured me that the salts of rubidium and cesium possess the same therapeutic effects as the other alkali-salts. In experimenting upon his person he always took the cesium salts in smaller quantities than when he was taking the other alkali-salts internally. Thirteen years ago cesium salts were very expensive chemicals to experiment with, and as his deductions were mostly speculative he was not prepared to publish his results in scientific journals. I have an unpublished manuscript, written in 1881, in which I have noted the following in regard to cesium and rubidium:

"Since cesium appears to possess the most electro-positive character of the elements, one would rationally suppose that it might play an important function in the animal and vegetable kingdoms. So is it the case with rubidium, the next electro-positive element in rank. It is not difficult to understand that cesium and rubidium, on account of their very high electro-positive nature, probably perform the functional activities of the alkalies in a higher degree. Cesium is reputed to operate toxically upon the nerves of the heart, and the same is stated of rubidium. It is a great question if this be really true. It is more reasonable to suppose that the elements cesium and rubidium, in combination with the halogens, will perform their chemic and physical functions much more conspicuously in the system than the lower electro-positive members of the series."

Dr. Wernigk always used cesium bitartrate in small doses, beginning with ¼ of a grain and increasing to 5 grains three times daily. I have used the bromid and bitartrate of rubidium when experimenting on myself in doses of from 3 to 5 grains three times daily. I used rubidium bromid to alleviate nervous palpitation of the heart. I would have used cesium bromid, but was prevented on account of the high price of the salts of cesium.

As soon as the exorbitant market price of the salts of cesium and rubidium is reduced, there is no doubt that they will often be substituted for potassium or sodium salts. Experience will also doubtless teach that they can be given in larger doses.

Cesium is the ideal alkali-metal. It was the first element discovered by means of spectrum analysis. Chemically it is the king of the alkali-metals, being the most electro-positive member of the elements and outstripping them all in electrolytic conductivity. Metaphorically speaking, it stands with rubidium in the same relationship as gold does to silver.

ACETANILID AS A SURGICAL DRESSING.

Surgical Dispensary, German Hospital.

SERVICE OF G. A. BODAMER, M.D.

[Reported by ALFRED HAND, M.D., Resident Physician]

FOLLOWING the suggestion of Dr. Francis W. Harrel in THE MEDICAL NEWS (vol. lxiii, page 438), acetanilid has been used in the Surgical Dispensary of the German Hospital as a substitute for iodoform. The results obtained have been most excellent. As stated by Dr. Harrell, acetanilid acts especially well when applied to the lacerated wounds of fingers which mechanics receive, and to which dust, oil, and foreign bodies of every description gain easy access. In the large number of cases of this description (many of which come from Baldwin's Locomotive Works), in which acetanilid was employed, not one has suppurated. Thus healing takes place in a short time, and it is often possible, without keeping the men away from work much longer, to save half of a phalanx, when amputation formerly would have been practised.

Acetanilid has also been used in all fresh wounds (except small scalp-wounds, to which pure ichthyol is applied on lint) which have come to the Dispensary in the last two months, and suppuration has occurred in but four of these: 1. An extensive incised wound of the forearm of a fat woman; it was necessary to suture a tendon and to use twenty-three sutures in closing the wound; there was so much tension that the edges of the wound sloughed afterward, although at the second dressing the wound was dry. 2. A deep, lacerated scalp-wound; there was considerable hemorrhage, and as the bleeding-points could not be readily caught, a compress, on which acetanilid had been dusted, was applied; the man came back after five days and a few drops of pus were found in the wound. 3. A deep, incised wound of the leg, with the tibialis anticus muscle severed. The antisepsis was at fault here, as the skin-wound healed, but suppuration appeared in the muscle. 4. A deep, incised wound between the thumb and metacarpus; some grease had been used as a dressing before coming to the hospital; the skin healed readily, but pus formed deep in the wound.

Some of the more important cases which were successful included a scalp-wound nine inches long, extending from the back to the front of the head; three incised wounds of the arm, with severed tendons; all of the amputations of digits, and, in fact, all of the other fresh wounds.

Simple ulcers, such as follow burns of the second degree, healed promptly without pus under acetanilid.

On chancroids acetanilid does well, at least as well as iodoform, and has the advantage, from the patient's standpoint, of being without odor. In some cases it causes pain for a few moments after being dusted on the sore, and in two cases herpetic vesicles followed its use.

Several syphilitic leg-ulcers, with profuse discharge, have dried up and healed rapidly with acetanilid, coupled with anti-syphilitic treatment. Others, however, have shown no improvement.

Dr. Bodamer has used acetanilid in his private practice, applied to mucous patches, having the patient hold the mouth open for several minutes while the powder was applied. The effect has been remarkable, the patches clearing very rapidly. He also used it in a case of ulceration of the rectum in which malignancy was feared, and prompt healing followed. In a bone-case which had persisted for some time, he secured healing by the use of acetanilid while the patient was confined to bed by an attack of influenza. In one sinus-case, the acetanilid was injected in a watery mixture, and after a few hours profuse sweating occurred, and the patient experienced a rather pleasant sensation as of floating in the air.

Acetanilid has also relieved a moist, eczematous condition, attended with the formation of crusts, around the navel of an infant a year and a half old. The condition had persisted since birth.

Acetanilid is insoluble in water, but soluble in alkalies. As its toxic effects have only followed the internal administration of excessively large doses, it is improbable that enough could be absorbed, after being dissolved in the discharges of a wound, to produce unpleasant effects, unless injected in large quantities in sinuses. In this respect iodoform and acetanilid are on a par. As a desiccant, the latter is far superior, the dryness of the wounds in all cases having been remarkable, the acetanilid being found as a thick, dry crust over the wound at the second dressing. As regards expense, acetanilid can be procured at one-tenth the cost of iodoform.

Of course acetanilid must be used much more extensively before its proper place as a surgical dressing can be determined, but from the results thus far obtained it would seem that it is a cheap, odorless, non-irritant dressing, with antiseptic, anesthetic, and strongly desiccant properties.

INSANITY CURED BY QUININ.

BY EDWARD ANDERSON, M.D.,
OF ROCKVILLE, MD.

DISEASE often manifests itself in mental derangement only, particularly when there is an hereditary predisposition to insanity. Before placing persons in asylums for the insane, we should look into their histories and carefully note every circumstance connected with their lives, both past and present. On the 11th of June, 1893, I was called to see a colored woman, between seventy-five and eighty years of age, who had suddenly become a raving maniac, tearing her bed and clothing, and inflicting injuries upon herself and everyone who came within her reach. This woman's brother was an imbecile, her sister insane, and two of her daughters had become demented and wandered off. There was no rise of temperature and no disease apparent, but thinking there might be pain in the head, I gave the woman fifteen grains of sodium salicylate three times daily, with slight benefit. I also tried my favorite remedy in such cases, hyoscyamin, but it also failed to quiet or produce sleep. I then used sulfonal, with no better success, and was obliged to resort to chloral, of which a dram a day was required to control the woman. After her children worried with her for two weeks, they determined to send her to an asylum. I knew it was very unusual for a person of her age to become mentally deranged, and remembering that before moving to Rockville she had lived on the brow of a hill overhanging a small stream, which overflowed its banks during every hard rain, I thought I would try quinin. After giving her fifteen grains three times daily for a week, her mind was perfectly restored. A relapse occurred on the 4th of September, which was at once relieved by the same remedy. Except for a slight melancholia, that comes on every other day, and which quinin or arsenic will speedily dissipate, she is as well as ever. Had this woman been young she would probably have spent the remainder of her days in an insane asylum. As malaria is almost unknown in this section, I would not ordinarily have thought of giving an anti-periodic.

PROPHYLACTIC AND GERMICIDAL TREATMENT OF DIPHTHERIA.

BY C. H. HAMILTON, M.D.,
OF DUBUQUE, IA.

FOR simplicity, facility of application, and efficiency in the topical treatment of pharyngeal diphtheria, both as a prophylactic and as a germicide in developed cases, I use the following with much success:

℞.—Hydrargyri biniodidi . . . gr. ij.
Sacchari albi . . . . ℥j.
Olei menthæ piperitæ . . . ♏ij.—M.

S.—Place from gr. v to x in powder every hour or two hours on the tongue or inside the lips of the child, without giving water for a few minutes afterward.

Should laryngeal or tracheo-laryngeal symptoms develop, I use, in addition to the foregoing, also with some success, unslaked lime and turpentine as follows: Place a quart of unslaked lime in a vessel of appropriate size, and pour at first upon it half an ounce of turpentine, and then enough boiling water to completely cover the lime, and place this vessel under a cotton sheet, which is thrown over the head of the nurse and infected child. A cloud of vapor will be emitted for ten minutes at each sitting, which can be repeated hourly if required for the paroxysms of difficult breathing.

A spray of hydrogen dioxid, one part to four of water, is also a great favorite with me.

The biniodid does not coagulate albumin, as does the bichlorid, and for this reason may be more efficient. Well triturated with the sugar and peppermint it is quite pleasant, and, given dry, adheres to the throat, so that the germicide is thus brought well in contact with the surface which may be, or is, infected.

A CASE OF QUININ IDIOSYNCRASY.

BY JOSEPH L. HANCOCK, M.D.,
OF CHICAGO.

THAT small doses of quinin sulphate produce in some persons annoying symptoms, is well demonstrated in a recent case in my practice. A gentleman, a florist by occupation, twenty-six years of age, tall, with a dark complexion, and of rather slight build, was suffering from an acute "cold." The mucous membrane of the nasal passage had been discharging serum, and the general unpleasant sensations following this condition were increasing. Under like circumstances he had some time before taken quinin (two grains), but always with the results to be described.

I saw the man on the morning of December 3, 1893. While trying to attend to his business, he was feeling depressed in spirits and was about to return home in order to be quiet. An intense erythema was present, with sensations of burning and itching over the entire body, including the hands and face. These symptoms were intensified by contact with cold air. The skin of the hands and wrists showed little whitish, apparently bloodless, raised spots. The amount of quinin taken had been two grains on the previous evening; followed in a short time after by another dose of the same quantity, so that the total amount taken was four grains. The intense redness of the skin and other coincident symptoms mentioned progressed until about noon next day, dating from the time the last dose had been taken. Then a gradual subsidence took place lasting through half of the next day, leaving the patient without further serious effects.

MEDICAL PROGRESS.

Enteric Fever; Perforation; Peritonitis; Recovery.—NEWTON (*Chicago Medical Recorder*, vol. v, No. 6, p. 409) has reported the case of a lad, seventeen years old, who came under observation on the third day after having taken to his bed, with diarrhea, tympanites, and pain in the right iliac fossa. The temperature was elevated and rose-spots were present upon the abdomen. Restriction of the diet to milk and beef-tea, and the administration of a mineral acid and pepsin, and bismuth, salol, opium, were followed by amelioration in the symptoms. On the seventh day, however, the temperature again rose, the pulse became accelerated, small and thready, the face pinched, the skin cold and clammy, the tongue dry, and the abdomen tympanitic and extremely sensitive. It was learned that during the previous night, while a movement of the bowels was taking place, sharp, acute pain was felt in the side. Perforation of the bowel was diagnosticated, and celiotomy advised but not acquiesced in. Morphin, strychnin, and whiskey were repeatedly administered, and by the following day the patient had rallied somewhat. He remained in a precarious condition for several days, when he gradually began to gain ground. For the succeeding three weeks the temperature pursued an irregular course and the diarrhea was particularly obstinate. After the lapse of another week indications of the presence of an abscess between the anus and the scrotum appeared, and three ounces of fetid pus were evacuated. Through the opening made a probe could be introduced into the abdominal cavity for a distance of ten inches. The opening was kept patulous by means of gauze, which was removed after the lapse of twelve days, and the external wound was permitted to heal. From a few days after the occurrence of the supposed perforation complaint was made of a particularly sore spot, about three inches in circumference, below and a little to the left of the umbilicus, and over which percussion yielded a dull note. It is believed that the spot indicated the situation of the local peritonitis that existed, and which remained local from the formation of intestinal adhesions as a result of the exudation of plastic lymph. As peculiar features of the case are pointed out the early date of the occurrence of perforation, the situation in which the abscess pointed, the failure of the temperature to decline, and the absence of vomiting.

Ingrowing Hairs.—GUTHRIE (*Practitioner*, No. 307, vol. lii, p. 19) calls attention to a condition of ingrowing hairs, which presents itself in the form of bluish-white pimples, varying in size from a pin's head to a small pea, situated usually about the chin where the beard grows the thickest. Careful inspection of the unshaved chin and cheeks will show here and there the presence of "giant hairs." These are dark in color, and as thick as hog's bristles. The slightest traction with forceps suffices to painlessly remove them. The thickening is due to the deposit of a dark, soft material, which envelops the hair throughout its extent. This layer can be scraped off, and is soluble in liquor potassæ. The hair itself is also thickened, aad its structure is blurred and indistinct. It is probable that the little bluish-white pimples form by the growing within the hair-follicle of what remains of a broken, thickened, and brittle hair. The condition occurs most commonly on the bearded face, but it is sometimes observed in other situations, as the axilla, the pubes, the periphery of the hairy scalp. Under the latter circumstances the condition is dependent rather on a blockage of the orifice of the hair-follicle than upon disease of the hair itself. Sometimes, instead of a single hair, such a follicle will contain a minute ring-shaped tress, composed of a dozen or more fine hairs. These are particularly common about the under surface of the penis, where they often suppurate and discharge a foul-smelling mixture of pus and decayed sebaceous matter. In treatment giant hairs should be removed by means of forceps, but it is essential that no force be used. When the little nodules have formed, the overlying surface should be sterilized and an incision made with a sharp tenotomy knife. A portion of hair will present, and can easily be extracted.

The Knee-jerk in Diabetes Mellitus.—Among 131 cases of diabetes mellitus GRÜBL (*Neurolog. Centralbl.; Wiener med. Presse*, No. 2, 1894, p. 66) found the knee-jerks normal in 113, and exaggerated in 5. Three of the latter, however, presented not true diabetes, but merely the glycosuria of neurasthenia, and in them both the presence of sugar in the urine and the state of the reflexes were to be ascribed to the condition of the nervous system. Among the other 115 cases were nine of the severe type of diabetes mellitus. Of these nine the knee-jerks were exaggerated in two, which pre-

sented great weakness and in which the urine contained large amounts of sugar and acetone, but in which, as in the course of treatment, the general condition improved, the excitability diminished, and ultimately the knee-jerks became normal. In four cases of severe diabetes the knee-jerks were abolished, or greatly enfeebled. The knee-jerks were also wanting in nine mild cases, but in two of these posterior spinal sclerosis coexisted, and in a third there was such an excess of adipose tissue as to interfere mechanically with the elicitation of the phenomenon. The knee-jerks were thus lost in ten cases among 131—7.6 per cent. It was further found that the knee-jerks may be preserved in the most severe cases, even in the presence of coma, while they may be absent in mild cases in which the sugar can be made to disappear by appropriate diet. It thus appears that symptomatically the knee-jerks have little or no significance, either diagnostically or prognostically.

The Surgical Treatment of Pulmonary Cavities.—From a study of the present aspect of the surgery of the lungs, DANDRIDGE (*Annals of Surgery*, vol. xix, No. 2, p. 129) concludes that a certain number of pulmonary cavities can be successfully dealt with by incision and drainage. Tuberculous cavities in the lower portion of the lungs, if single and superficial, and if the general condition of the patient permits, should always be opened. Cavities at the apex should only be opened when there is free and persistent fetid expectoration that has resisted treatment, and the remainder of the lung is not involved. Abscess, gangrene, and hydatid cyst should be opened and drained whenever they can be located. Closure of the pleura should be insured before the evacuation of a cavity is attempted. In cases of pyo-pneumothorax the fistulous track should be explored, and any cavity freely laid open by means of the cautery. Cavities that have been opened are best treated by packing with gauze, preferably impregnated with iodoform. The further careful trial of such agents as iodoform, chlorin-gas, and zinc chlorid is desirable to determine whether or not the tuberculous infiltration may be modified by them. It is also desirable, for the further extension of surgical interference in pulmonary cavities, that the means of locating such cavities and of determining their size and the exact character of the tissue that overlies them should be perfected by further study, and for the accomplishment of this the surgeon must look to the physician.

Stonemason's Neurosis.—FRERE (*British Medical Journal*, No. 1726, p. 188) has reported the case of a stonemason, forty-five years old, who was compelled to give up his work on account of tremor of the left hand, with inability "to govern his chisel." The grasp of this hand was found to be distinctly enfeebled. The hand was steady in most positions, but as soon as an attempt was made to grasp the chisel, as if at work, there was set up an incontrollable shaking of the hand. There was no wasting and no painful points. General and special sensibility was preserved, and ophthalmoscopic examination revealed no abnormality. The man complained that when at work the chisel "would dance in his hand." Cramp was noted on only three occasions, each time confined to the little figer, probably because at times the chisel was grasped with the little and ring fingers only. These attacks were of brief duration. Pain, progressive in character, had appeared as follows: in the carpal joint of the thumb, which felt "as if it were broken;" between the metacarpo-phalangeal joints of the first and second fingers; at about the center of the forearm, on the radial aspect; at the center of the upper portion of the forearm, on the anterior aspect; at the shoulder along the tendon of the biceps. The pain in the forearm was at times so intense as to prevent grasping with the thumb or the first and second fingers; at such times these digits would be extended and the chisel grasped with the little and ring fingers. Marked improvement followed rest, massage, and small doses of arsenic.

A Pen and Holder Swallowed.—PLANT (*Archives of Pediatrics*, vol. xi, No. 2, p. 141) has reported the case of a fifteen-year-old boy, of limited intelligence, who, after complaining for some days of pain in moving about and in sitting down, told his mother that a week before he had swallowed a pen and holder. A diet of mush and milk, together with castor-oil, was ordered, but proving of no avail, celiotomy was undertaken. The instrument was found and removed without difficulty. It was an ordinary wooden holder, stained red, about six inches long, and had a steel pen attached which pointed downward. It had been carried in the stomach and intestines for about ten days. The boy made a good and uneventful recovery.

THERAPEUTIC NOTES.

The Treatment of Empyema in Childhood.—At a recent meeting of the Medical Society of Hamburg, SCHÜTZ (*Therapeutische Monatshefte*, J. 8, H. 2, p. 76) related that of eighteen cases of empyema in children treated by resection of one or more ribs, recovery ensued in all but two, and these were in children under one year of age. The prognosis of operation at this period of life is not favorable, but siphonage is not applicable. The drainage-tube, of considerable size, was permitted to remain, on an average, twenty-four days; the wound had healed in the course of an average period of forty-two days. Operation was undertaken as soon as the diagnosis was made, as the mortality of expectant treatment had been 80 per cent. Left-sided empyemata are particularly dangerous on account of the liability to the development of pericarditis. The resection was made as near as possible to the vertebral column. After the section of rib has been removed the pleural cavity was irrigated with a warm solution of boric acid, intended for the removal of the purulent contents rather than for disinfection. More active disinfectants, such as carbolic acid, are to be avoided on account of the risk of intoxication. Siphonage is not practically applicable in the case of young children on account of the liability of the tube to slip out of place. The operation was invariably well borne.

For Recent Ringworm.—

℞.—Thymol. . . . . ℥ss.
Chloroformi . . . . . ℥ij.
Olei olivæ . . . . ad f ℥j.—M.
Ft. applicatio.
S.—Apply topically night and morning.

Practitioner, No. 308.

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OF MEDICAL SCIENCE.

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THE PRESENT STATUS OF OUR KNOWLEDGE OF BACTERIOLOGY.

THE philosophizing bacteriologist must realize that, in its present development, his science is in an unsatisfactory condition. This view was well expressed in a recent conversation, by a biologist who has devoted much attention to bacteriology, when he compared the bacteriology of to-day with biology before the promulgation of the law of variation. Then the zoölogist confined his study to "typical" animals, ignoring the varieties. So, also, we now speak of "typical" bacteria, of "typical" cultures, of "typical" effects, and we tend to remain in ignorance of the varieties, simply because, in our present knowledge, we have no underlying law which can account for the variations and make them interesting. A few examples will illustrate this point; although, in point of fact, scarcely a page of bacteriology fails to furnish ground for this criticism.

The working bacteriologist meets with curious phenomena almost every day of his practice. Something inexplicable happens to an apparently familiar culture, and it takes on new properties. The morphology of a given bacterium seems to be of an established constancy, until suddenly, and for some unknown reason, it takes on a strange form. One day a certain species of bacilli will show those striking irregularities of morphology known as "involution-forms"; on another day they will appear plump and regular. Certain of these conditions we look upon as typical; the rest, as mere variations.

For lack of a better basis of classification, the pathologist is accustomed to divide bacteria into two classes, pathogenic and non-pathogenic. This division was, to within a very short time, considered quite adequate for practical purposes. In the light of the latest investigations, however, we are forced to conclude that even the pathogenesis of a given bacterium is extremely variable. We are shocked to behold microbes, hitherto considered absolutely harmless, suddenly assume active pathogenic properties. The diphtheria-bacillus is said to exist in two varieties, a pathogenic and a non-pathogenic form. The testimony of competent bacteriologists is to the effect that these two varieties of the diphtheria-bacillus cannot be differentiated by their morphologic and cultural peculiarities,[1] and that the distinction can only be absolutely made by inoculation of susceptible animals. The pathogenic variety of the diphtheria-bacillus is found only in the membrane of true diphtheria; but the non-pathogenic variety is found in various benign throat-affections, and in the *throats of apparently healthy individuals*. Here, then, variation plays an all-important and very suggestive rôle.

Under the name *Streptococcus pyogenes*, we find at least two distinct varieties of pyogenic cocci, which are indistinguishable in culture and in microscopic preparations. Inoculated upon the skin of man, one variety of this organism produces only a circumscribed and fleeting reaction; the other produces a widespread erysipelatous inflammation. As an instance of an indifferently pathogenic microbe becoming highly septic, we may cite the rapidly-accumulating evidence against the *Bacillus coli communis*. Not only is this bacillus frequently found as the sole inhabitant of various peritoneal exudates, but it is also found in pure culture in several other inflammatory affections, in which it must surely have gained access from without the body. From the observations of MOORE (U. S. Department of Agri-

[1] Escherich (Berliner klinische Wochenschrift, 1893, Nos. 21–23), in an exhaustive study of this subject, endeavors to furnish some specific differential culture-tests for the true and pseudo-diphtheria-bacilli. The delicacy of these reactions, however, only serves to illustrate the difficulties which beset this work, and to indicate the necessity of much further study.

culture, Bureau of Animal Industry, Bulletin No. 3, 1893, p. 45), we learn that cultures of *Bacillus fluorescens liquefaciens* suddenly took on septic properties, and that a rabbit inoculated with 0.10 c.c. of a bouillon-culture died in seven days. *After three weeks, the cultures lost their pathogenic qualities.* This bacillus has been cultivated in the laboratories of many bacteriologists through many generations, and this is the first suspicion which has ever been cast upon its constantly recognized benign character.

Considering the apparent simplicity of structure of these minute organisms the absence of a well-formulated theory to interpret the wide variation in their morphology and physiology is extremely perplexing. The controversy waging upon the identity of the *Bacillus coli communis* and the *Bacillus typhi abdominalis* illustrates this point. Certain structural features, as the tendency to form long threads, and the characteristic flagella, are said to distinguish the typhoid-bacillus from the colon-bacillus. But colon-bacilli are sometimes observed growing into threads, under certain conditions; and MOORE (*Wilder Quarter Century Book*, 1893) has shown that, as regards the flagella, it is impossible to distinguish *B. choleræ suis*, *B. coli communis*, and *B. typhi abdominalis*. Then as regards their physiology, typhoid-bacilli are said to be actively motile, while the colon-bacilli possess but slight motility. But in old cultures of each of these organisms, no difference can be detected in the motility of individual bacilli. The property of inducing fermentation in glucose-solutions, with the production of gas, and of producing indol in beef-peptone solution, has been regarded as distinctively characteristic of *B. coli communis*. A French observer, however, comes forward and claims that, by growing *B. typhi abdominalis* under new conditions, it may also be induced to give rise to fermentation and to the indol-reaction. Moreover, between what we may regard as "typical" colon-bacilli on the one hand, and "typical" typhoid-bacilli on the other, there is a whole series of intestinal bacilli, known under various names, and described by various bacteriologists, which represents a very perfect gradation from the one typical microbe to the other. Are these intermediate varieties to be regarded as transition forms? And is *B. typhi abdominalis* to be regarded as nothing more than a modified variety of the ever-present *B. coli communis?*

Problems such as these haunt the bacteriologist's daily work, and convince him that he has but mastered the alphabet of his wonderful science. While we are ready, then, to give to bacteriology its full share of credit, we must not forget that its very youth largely explains its manifest shortcomings.

THE TREATMENT OF LATERAL CURVATURE OF THE SPINE.

FROM time to time there are, in medicine, as in the allied sciences, periods of inactivity, during which the profession, surfeited with the pleasure of some new discovery, languidly rests upon its laurels before entering upon another conquest. The present appears to be such a season in the history of orthopedic surgery. The impetus given by subcutaneous tenotomy, antiseptic osteotomy, forcible manual and mechanical restoration, resulted in a certainty of cure in club-foot never before attained. Since these innovations no decided advance in any department of orthopedic surgery has been made; but generous discussion upon the etiology, pathology, and treatment of lateral curvature of the spine has resulted in greater uniformity of view, and manifests a tendency to lead to some definite conclusion in regard to the prevention and correction of this unsightly deformity.

The obstacles that have hitherto prevented the earlier solution of these problems have been the want of literary research, anatomic investigation, the application of mechanical therapy, and the desire of each orthopedist to credit himself with the application of a new principle or the invention of a new apparatus. This status of affairs is well illustrated in a recent contribution by BIDDER (*Deutsche medicinische Wochenschrift*, 1893, No. 52, p. 1378), who describes as "meine elastische Pelotten-bandage" what is, in principle, BARWELL'S elastic apparatus.

The difficulty with the modern orthopedist in regard to scoliosis has been in receiving so much material at second-hand, without sufficient research. In no department are original articles so valuable as in orthopedic surgery, as apparatus must be described as well as illustrated; abridged descriptions are often worthless, and reproduced illustrations lose much in the reproduction. The earlier writers, as COPELAND (1815), SHELDRAKE (1816), BAMFIELD (1824), SHAW (1827), COULSON (1839), TAMPLIN (1846), and LONSDALE (1857), were very thorough in their clinical observation, and recorded much that if

carefully studied by the modern orthopedist would enable him to avoid absurd repetition. Many of the methods of treatment and the roughly-constructed apparatus were the result of a false pathology. The abandonment of tenotomy in lateral curvature by that prince of tenotomists, JULES GUERIN, and also by his contemporary, PROF. LEWIS H. SAYRE, was an advance in the right direction. The removal of the cumbersome and injurious supports constructed after, but not improvements upon, the pattern of SHAW, was also an advance, and to-day the modern orthopedist has reached a position but slightly in advance of LONSDALE in the pathology and treatment of scoliosis. Ordinary habitual scoliosis may best be considered in three classes, according as the degree of the affection is mild, moderate, or severe.

These three degrees likewise indicate the prognosis, for a positive cure may be promised in the mild cases, great improvement and possible cure in the moderate cases, and little improvement and but slight amelioration in the severe cases.

The treatment of the mild forms is now a completed chapter, the modern innovations and modifications of the gymnastic methods being but fanciful changes of nomenclature and efforts at self-advertisement.

The prosthetic improvement of the incurable cases may be left to the judgment of the surgeon, the skill of the mantua-maker, or the fancy of the afflicted individual.

The treatment of the medium cases is the "bone of contention" for modern orthopedic discussion and experimentation. It is in these cases that the question of the treatment by means of pressure-correction comes up for consideration. In these, mechanical appliances are proposed and employed to forcibly stretch the contracted curves, the force being gradually increased and repeatedly applied. Two forms of correcting appliances have been employed: (1) those placing the trunk in correcting attitudes, and (2) those designed to exert direct correcting pressure, and BEELY, LORENZ, HOFFA, REDARD, and BRADFORD and BRACKETT have shown that a great amount of force can be employed without injury, and that practical results can be obtained in this manner.

These methods are yet upon trial, but they indicate an advance which promises to render possible the cure of all of the moderate cases and the improvement of some of the severer forms. They are, however, applicable only to the neglected forms of hospital cases, for, if properly treated, scoliosis in private practice but seldom reaches these severer forms.

The subject of forcible correction of scoliosis should be looked upon as modern surgeons look upon resections of the major articulations, especially the hip-joint—as a *dernier ressort.*

MR. HOLMES summed up his remarks upon the excision of the hip "by the statement that it ought to be very rarely indeed required, if the diease were treated properly at its commencement." The same statement applies with greater emphasis to the forcible mechanical correction of scoliosis, and we may add that it ought *never* to be required if the disease be properly treated at its commencement.

REFORMS IN THE TREATMENT OF THE INSANE.

THOUGH great advances have been made in our knowledge of the etiology, nature, and recognition of the various forms of insanity, a corresponding improvement has not been effected in our modes of management and methods of treatment of the insane. The causes of this disparity may be traced largely to the older, false conceptions of insanity and the enactment of complicated laws providing for the incarceration of its unfortunate victims.

In a paper read at the International Congress of Charities, Correction, and Philanthropy (Section IV, on the Commitment, Detention, Care, and Treatment of the Insane) held in Chicago in June last, DR. STEPHEN SMITH (*American Journal of Insanity*, vol. l, No. 3, p. 325), who for six years was Commissioner on Lunacy for the State of New York, made an eloquent and philosophic plea for a revision of existing laws appertaining to the disposition of the insane. He pointed out that these laws are but elaborations of ancient laws, unmodified by the advances that have been made in knowledge concerning the nature and treatment of insanity.

The insane person is almost universally treated as if he were criminal, as one dangerous to the welfare of society, and not, as he properly should be, as a sick person.

In many States the physician plays but a subordinate part in the determination of the existence or non-existence of insanity and in the disposition of the case, while in some the entire matter is decided by persons wholly without medical training. As a natural outcome of such a course of procedure the

treatment is conducted upon an expectant basis rather than from an aggressive standpoint. Too often the institution for the care of the insane is looked upon as an asylum rather than as a hospital. Modern investigation, however, has shown that insanity is but a manifestation of cerebral disease, and that its victims are sick, just as the victims of disease of the lungs or other organs or structures are sick, and that the one, like the other, requires medical care and observation in order to restoration to health; or, if incurable, that life may be made as comfortable and as useful as possible.

The question of depriving an insane person of liberty should be decided upon the same lines that are pursued in the determination of the isolation of a case of contagious disease, *i. e.*, the danger to the individual and to the community, and the ability or the inability of the friends of the patient to make the necessary provision. As cases of insanity usually first come under the observation and care of the family physician, he should be authorized to issue certificates of insanity, to continue in force for a brief and limited period of time. In case it be deemed necessary for the welfare and safety of the patient and others that he be placed under the care and treatment of a hospital for the insane, this certificate should be transmitted to the appropriate hospital-official, whose duty it should be to detail a medical officer to make a personal examination and such inquiry as may seem necessary to confirm or correct the opinion of the first examiner. In the discretion of this officer the patient may be removed to a hospital, where within twenty-four hours another examination is made and the previous findings verified or revised. The certificate thus properly approved and indorsed should, within a short time, be forwarded to a Committee on Lunacy of the State Board of Charities.

In order to remove the impression that hospitals for the insane are custodial rather than curative in aim, radical changes in both the construction and the management of such institutions will be necessary. More, of course, can be accomplished in this direction in the newer States than in the older, but even in the latter existing conditions can be favorably modified, and in the erection of new buildings the reforms contemplated can be made effective.

It is desirable that patients be classified (1) according to sex; (2) according to the nature of their disease; (3) according to the stage of their disease; and that there should be (4) a department for convalescents and (5) one for incurables. Where practicable a cottage-plan of organization would perhaps be the best, provision being made for accessory features, such as a school, a place of amusement, opportunities for engaging in industrial and agricultural pursuits. The superintendent of such an institution would have to be a throughly equipped medical man, specially qualified by education and experience. The care and treatment of the cases should be placed in the hands of attending physicians, who should have had at least one year's experience in the hospital treatment of the insane, and of whom there should be at least one for every hundred curable patients. The immediate care of the patients should be intrusted to first and second assistant physicians, who should be selected from recent graduates and receive adequate compensation, and of whom also there should be one to every hundred acute cases. The following departments would seem essential: a reception ward or hospital; a department for acute cases; a department for convalescents; a department for incurables.

The propositions embodied in the several recommendations of DR. SMITH seem so thoroughly rational and so humane, and the results to be reached of such great importance, that we earnestly urge their early acceptance and enforcement.

EDITORIAL COMMENTS.

The Seminal Fluid of Tuberculous Patients.—Numerous observations have been made upon the seminal fluid of persons suffering with some form of tuberculosis, with results that have been rather contradictory. A recent study by SPANO (*Gazetta degli Ospitali*, November 11, 1893, p. 1418; *Revue de la Tuberculose*, 1893, No. 4, p. 322) would seem to demonstrate conclusively the infectiveness of seminal fluid from cases of pulmonary tuberculosis, even when the genito-urinary tract is uninvolved. The investigation included eight cases—six of pulmonary tuberculosis and two of tuberculous arthritis. In the former and in one of the latter the spermatic fluid was obtained from the seminal vesicles after death, under appropriate antiseptic precautions. In the remaining one the fluid was obtained in the course of an ordinary emission. To exclude the possibility of the existence of a beginning tuberculosis of the genito-urinary tract that might escape macroscopic observation, histologic examinations were made in all of the fatal cases. In all of the cases cover-glass preparations were made and stained by approved methods. In three, tubercle-bacilli were readily detected; in five, not at all; in one, bacilli were found only after the fluid had been treated with caustic soda and boiled, the supernatant fluid being decanted. Intra-peritoneal injection

of a portion of the fluid was practised in seven cases, with success in five. Vaginal inoculation was practised in four instances, with success in two. Cultivation-experiments were undertaken in six instances, with success in three. In neither of the two cases of tuberculous arthritis was the seminal fluid infective. While the number of observations is perhaps too small to warrant ultimate conclusions, the results are, to say the least, extremely suggestive.

The Morality and the English are Much Alike.—The following letter was recently received by a general physician of Philadelphia from an optician:

RESPECTED SIR: Mr. —— —— —— is a practical optician of 34 years standing and 16 years with —— —— —— and their foreman; would like to make arrangements with you to send as many of your patients as you can, and in order to make it pay you I will allow you 25 per cent of the gross receipts of your patients; in order to make this arrangement I will offer you a few suggestions. When you have a patient before you who complains of headache or any trouble with the eyes or glasses, or if you observe that they cannot see as well as they should with the glasses they are using, or if they do not wear glasses, recommend them to me at once to see if I cannot give them something better. Give them my introduction card and tell them by showing this I will as a personal favor to you make an examination of their eyes without any charge. You will be surprised how many patients you will send and the amount of commission that will be to your order at the end of a month, besides having your patients come back to you for other treatment. If you send your patients to a prescribing oculist you will probably never see them again as they would prefer the oculist to treat them for everything while I only examine the eyes for glasses.

—— —— —— —— will wait on you to-morrow during your office hours. Your perusal, patronage and co-operation respectfully solicited.

—— —— ——

SELECTION.

THE TERMS "INFECTIOUS" AND "CONTAGIOUS."

THE word "infection" has been and is still used in various senses.

1. By some writers it is used, in distinction from contagion, to indicate the transmission of disease without personal contact, as through the air and infected things, not persons. This usage, once common in medical writings and still popular, is dying out among physicians and is no longer supported by the best medical authorities.

2. According to another usage, infection refers primarily to a diseased condition characterized by certain symptoms and lesions, and only secondarily or not at all to the nature and mode of transmission of the morbific agents causing the disease. The etymology of the word—from *inficere*, to taint, to spoil—seems to justify this meaning, but there enters also into the etymological sense the conception of something introduced from without. The morbific agents capable of producing infection in this sense are heterogeneous, and not easily classified, including many, but not all, pathogenic bacteria; some, but not all, pathogenic fungi; some, but not all, pathogenic protozoa; a few parasitic worms, notably trichinæ; some, but not all, toxic bacterial products; some poisons produced by other vegetable cells, as abrin and ricin; and some poisons produced by animal cells, as snake-venom. These poisons, produced by vegetable and animal cells, belong mainly to those called ptomains, leukomains, and toxic proteids. It will be observed that this second definition of infection is essentially clinical. This use is not common, and is not to be recommended.

3. Modern investigations have shown that the most common and typical infectious diseases, according to any signification of the term infectious, are caused by the invasion and multiplication of pathogenic microorganisms; and it is now customary, at least among bacteriologists, hygienists, and pathologists, to limit the term infection to the morbid condition caused by the entrance and growth within the body of pathogenic microörganisms, and to the act or process by which disease is thus caused. Infection in this sense refers to the nature of the morbific agents causing disease, and implies nothing as to the mode of transmission of these agents. The pathogenic microörganisms which we now know to be concerned in causing infections belong to the classes bacteria, fungi, and protozoa, but we know nothing about the specific agents of infection in many, and these among the most typical, infectious diseases, such as exanthematous fevers. Infectious diseases, as thus defined, form a tolerably definite and well-recognized group of affections.[1] An infectious disease may be localized or general.

According to this third definition, which is the one followed in the present article, infections are distinguished from intoxications. Poisoning with bacterial products plays the chief rôle in producing the phenomena of an infectious disease, and it is impossible to draw any sharp dividing line between intoxication and infection, but it is believed to conduce to precision and clearness to regard as agents of infection only such as are capable of reproduction—that is, such as are living organisms—and not to include among these agents chemical poisons, whether produced by bacteria or other vegetable cells or by animal cells.[2]

[1] The not very happy term, at least in its English dress, "invasive diseases" (Invasionskrankheiten), has been employed to designate other parasitic diseases, particularly those caused by entozoa. One is certainly reluctant to exclude trichinosis from the list of infectious diseases, as well as to admit to the list most of the diseases produced in human beings by fungi, such as thrush and the dermatomycoses. This reluctance is due to the fact that we cannot well abandon the conception that infection implies a permeation of the body with microörganisms or their products, such as we generally observe in bacterial diseases. If, however, we take a broad view of the relation of fungi to diseases of some of the lower animals, and especially to plant-diseases, we can hardly fail to include pathogenic fungi among infectious organisms.

[2] The difficulties which arise if we include, as is sometimes done, among infectious diseases simple intoxication with bacterial products without the entrance and multiplication of the causative bacteria within the body, are numerous. The bacteria concerned in the not unimportant group of affections caused by the reception of ptomains and some other bacterial products formed outside of the body, as in poisoning from decomposing meat, fish, milk, etc., are mostly strict saprophytes, incapable of parasitic growth in the body of the infected animal. It is only cer-

The old terms contagion, miasm, and miasmatic contagion no longer answer the purpose of modern medicine, but it is necessary to give the student some idea of the meaning attached to them.

A contagious disease is one capable of communication from one individual to another by means of direct or mediate contact. The introduction of the expression mediate contact in this definition is necessary, but it greatly lessens its precision. In ordinary use the epithet contagious is applied only to those diseases which are readily communicable from individual to individual, so that a person affected with the disease is a source of danger to those in proximity to him. When the infectious agent is eliminated from the diseased body only in such a way, as by the feces, that it is not likely to be directly received by a second individual, but takes a roundabout way, as through the ground and water, to reach another individual, then the disease is not usually called contagious, although under certain circumstances it may be so. Typhoid fever and Asiatic cholera are examples of such diseases.

It is evident that the term infectious diseases is a more comprehensive one than contagious diseases, and is not strictly comparable with the latter, as the former refers to the nature of the agents causing the disease, and the latter to the manner of transmission of these agents from individual to individual. It is also clear that the limits of what shall be called contagion are indefinite and arbitrary. It is not uncommon to speak of any infectious agent as a contagium. Whether or not an infectious disease is contagious in the ordinary sense depends upon the nature of the infectious agent, and especially upon the manner of its elimination from and reception by the body.

Most, but not all, contagious diseases are infectious. Scabies is a contagious disease, but it is not infectious.

A miasmatic disease is one caused by an ectogenous infectious agent, neither directly nor indirectly derived from another case of the same disease. The type of a miasmatic disease in the sense defined is malaria or the malarial diseases. The cause of malaria is a protozoön, which multiplies within the body, but, so far as we know, is never eliminated from the body in a living state capable of infecting another individual or the locality. The term miasm is sometimes used in a loose sense to designate infectious agents coming from the water or the ground, especially when believed to be conveyed by the air, or even to designate noxious gaseous emanations and undefined effluvia from the ground.

The expression miasmatic-contagious diseases was introduced in order to explain the often complicated, and even yet not thoroughly understood, modes of spread of Asiatic cholera and typhoid fever, and especially to this group was attached a variety of hypotheses, now for the most part overthrown, and which it is not necessary here to mention. In this group of so-called miasmatic-contagious diseases the infectious agent is eliminated from the diseased body in the living state, but in such a way that it is not likely to be directly received by a second individual; and to produce a second infection it must take ordinarily a path, often circuitous and tortuous, and not always easily traced, through various external media. This transit may be influenced, in ways which we now only imperfectly understand, by different meteorological and telluric agencies.—DR. WM. H. WELCH, in *Pepper's Text-book of the Theory and Practice of Medicine*, vol. ii.

tain poisonous products of bacteria which anyone would think of considering as infectious agents, and it would not be easy to define which toxic product should be admitted to the group and which excluded. If we admit as infectious agents toxic products of the bacterial cell, there is no reason why we should exclude similar chemical substances, particularly the toxic albumoses, produced by other vegetable cells and by certain animal cells. Poisoning by snake-venom is clinically a typical infection, and is so regarded by Virchow and others, who adopt a clinical rather than an etiological meaning of the word "infection."

If there were any chance, as there is not, of the word "infection" disappearing from medical nomenclature or from popular use, or if there were any good substitute for this word, it would probably not be worth while to try to adapt this old term to our modern conceptions, based upon a more exact knowledge of the causation of disease, and it might be left to the vague and loose meaning which has always attached to it in the minds of the people.

CORRESPONDENCE.

LONDON LETTER.

(From our Special Correspondent.)

The Pulse in Diabetes and the Treatment of Diabetes—Trephining for Hemorrhage in Brain-compression after Injury—Subphrenic Pyo-pneumothorax—A Test of Dr. Brown-Séquard's Orchitic Fluid—A Peculiar Form of Paralytic Dementia.

DR. SAUNDBY draws attention to the prognostic significance of the pulse in diabetes. The presence of excess of sugar in the blood is productive of sufficient obstruction to the circulation to cause an increase in the intra-arterial tension so long as the heart acts with normal vigor, but as the disease progresses nutritional changes are apt to affect the muscular structure of the heart, and with their development the pulse becomes feeble and easily compressible, thereby becoming an index of the wasting heart and a prognostic sign of most unfavorable augury. Speaking empirically, loss of knee-jerks is also found to be a sign of bad omen.

In regard to treatment, Dr. Saundby insists that the first thing to do is to find out the influence of a complete non-starchy, non-saccharine anti-diabetic diet, one, that is to say, consisting of meat, eggs, fish, jelly, almond biscuits, and cakes, tea or coffee, and mineral water. This is difficult to put up with for long, but it can be borne for a few days, and a few days will tell how far the glycosuria is dependent on the carbohydrates taken as food, and how far, therefore, it is worth while pushing dietetic treatment; for it is most undesirable to keep diabetics who are losing flesh and strength on too strict a diet, and Dr. Saundby goes so far as to say that every diabetic should be allowed as much carbohydrates as he is able to *assimilate*, estimating this by the amount of urine and sugar and the body-weight. A pint of milk and two or three large potatoes daily may often be added to the diet with very little increase of the glycosuria and with great benefit to the patient. Green vegetables, sea-kale, celery, salad, cream, cream-cheese, cheese, isinglass, blanc-mange, and

Irish and Iceland moss are aids to diabetic cookery. Irish moss is a very useful article, supplying a basis for puddings of which a great deal can be made by a good cook. Carbohydrates can also be given to diabetics in the form of levulose, or left-handed sugar, to the extent of one and one-half ounces daily, divided into three doses. It cannot be given in sufficient quantity to constitute an important nutriment, but it is most grateful to many patients, and it is one way of giving the quantum of carbohydrate, which, after all, is essential to even a diabetic's welfare. At least once a week a note should be taken of the body-weight, the total daily urine, and the total daily sugar, for if carbohydrates are given their effects must be carefully watched. Tea or coffee sweetened with saccharin or levulose may be drunk, or Bordeaux claret, or whiskey, or unsweetened gin, not exceeding four ounces a day and well diluted, or even in some cases a little bitter ale.

Two cases recorded by Mr. Littlewood, of Leeds, show the importance of considering carefully the desirability of seeking for internal hemorrhage whenever an injury in the region of the middle meningeal artery is followed by symptoms of compression. In the one case he trephined in the Rolandic region and found large clots, with free hemorrhage going on. The trephine used was a large one, but more bone was rapidly removed by Hoffman's forceps in the direction of the anterior inferior angle of the parietal bone, and on turning out the clot a torn vessel in the dura mater was exposed and was with some difficulty secured. For three days the patient improved and became able to answer questions, but he died five days after the operation. At the *post-mortem* an extensive fracture was found, together with suppurative meningitis. In another case, which died four and a half hours after the injury and in which nothing was done, the *post-mortem* showed a depressed fracture and a large clot (a teacupful) between the bone and the dura mater. No tearing or laceration of the brain could be discovered and the other organs appeared healthy. A laceration of the trunk of the middle meningeal artery was found very near the foramen spinosum. It is clear that in all *post-mortem* examinations of cases of this nature, care should be taken to discover and record the position of the bleeding-point as a guide to surgeons who may operate in similar accidents. It is also clear, however, that in any operative procedure for the control of meningeal hemorrhage the surgeon must be prepared to go far down, even to the foramen spinosum, and that he must be armed with means, such as a curved needle, for passing a ligature under the artery in this position. The difficulties of such an operation must be very considerable, and if, on exploration, it became clear that the hemorrhage came from low down, it possibly would be the simpler and safer plan to proceed at once to the ligature of the external carotid.

Dr. Lee Dickinson draws attention to the condition known as subphrenic pyo-pneumothorax, of which he details two cases and tabulates twenty-three others from the *post-mortem* records of St. George's Hospital. The causes of this condition are perforations from various lesions of air-containing viscera; although often well marked, the signs do not extend to the summit of the thorax, where normal phenomena are found to persist; the heart, moreover, is displaced far less than in true pneumothorax. It need hardly be added that these cases are very fatal. The previous existence of dyspeptic symptoms, together with a distribution of the physical signs somewhat different from those in true pneumothorax, should make one suspicious. The physical signs are such as amphoric breathing, metallic tinkling, and bell-note. Early in the history of the case there is often but little to raise the suspicion that the disease has an abdominal origin, except the fact of the onset of the symptoms having been preceded by sharp abdominal pain. The diagnosis is not especially embarrassing, but cases occur in which the signs observable are principally thoracic. It would appear that in most cases, before the end, the diaphragm becomes perforated, and a true pyo-pneumothorax results. When this takes place, the stomach, the duodenum, or other parts of the intestines may be affected, but by far the most frequent perforations are from simple gastric or duodenal ulcers. With the resulting abscess tympanitic resonance projects toward and partly occupies the abdomen at the same time that it produces physical signs within the chest.

A careful test has lately been made of the value of Dr. Brown-Séquard's orchitic fluid at the Hospital for the Paralyzed and Epileptic. Drs. Wood and Whiting, the house-physicians, used it in twenty-three cases of chronic nervous disease, only one of whom showed any improvement in physical condition during the course of treatment, and as this patient was an alcoholic and relapsed again after leaving the hospital, it is open to doubt whether even in his case the injections had any causative influence in producing the improvement. It is interesting, however, to note that notwithstanding this absence of any improvement in the physical condition, nearly all the patients expressed themselves as feeling better after the injection. Perhaps it is even still more interesting to observe that two patients treated with all the same formalities by injection only with distilled water, felt very decidedly better. Two patients stated that they could feel pinching sensations in the paralyzed limbs about three minutes after the injection; both of these patients were the subject of functional disease. The observers contended that they had obtained no results which would justify further trial of this method of treatment.

Mr. Hutchinson describes a peculiar form of paralytic dementia that occurs in connection with inherited syphilis, notwithstanding the comparative rarity of diseases of the nervous system in association with this disease in its hereditary form. This condition of dementia with paralysis appears to occur between the ages of three and six years and is rather aggressive. A child who up to that age may have been of average intellect and quite free from paralysis may in the course of a couple of years be reduced to a condition of the most helpless idiocy. It seems probable that it may be an affection of the cortex, very possibly beginning in the pia, and that the nervous changes are of a degenerative nature; the onset is not marked by any of the more severe head-symptoms, such as pain, convulsions, etc., which usually attend the presence of gummata, but it is not improbable that a transitory stage of congestion may precede the degeneration. Until the attack began the children seemed as intelligent as any, and the physiognomy was not suggestive of syphilis, but gradually the

limbs became weak, the little patients ceased even to try to save themselves from falling, speech became indistinct and was gradually lost, and in the end a condition of apathetic helpless idiocy was reached. The possible connection of this state with congenital syphilis is worth bearing in mind; it seems quite in keeping with other manifestations of that disease that it should show no signs for some years after birth. The keratitis and deafness which not uncommonly arise from inherited taint both of them usually set in at an age approaching adolescence.

NEWS ITEMS.

For the Prevention of Tuberculosis.—After careful consideration of the advisability or not of compelling the registration with the Board of Health of cases of tuberculosis, the Sanitary Committee of this Board has presented an elaborate report, of which the following abstract contains the essential points:

"Consumption is an infective disease, caused by the bacillus tuberculosis. All cases take origin directly or indirectly from other cases. A most common mode of infection is by inhaling dry and pulverized tuberculous expectoration. It is a distinctly preventable disease. If all this be true, and it is based upon the most reliable scientific data, it becomes imperative that all known precautions should be employed to prevent the spread of this disease, and particularly because it is one of the most widespread of maladies.

"During the ten years, 1884–1893, there were 28,289 deaths from consumption in Philadelphia, the mortality from diseases from all causes during the same period being 217,082. The percentage of deaths from consumption to all deaths is thus seen to be 12.52. This is approximately the average percentage of deaths from this disease for the whole country. In order of numbers it stands at the head of the list of deaths from all causes. During the same period the deaths in Philadelphia from diphtheria, membranous croup, scarlet fever, typhoid fever, and smallpox combined were 7.31 per cent. of the deaths from all diseases.

"The question is not whether the most active and continuous effort should be made to prevent the spread of this fatal disorder, but whether the Board of Health should assume this duty in conjunction with the attending physician, and, as a prerequisite in the performance of this duty, require the registration of all cases of this disease. There seem to be valid reasons for believing that the registration of pulmonary tuberculosis would be beneficial."

After referring to the other means of communicating the disease, such as, for example, the use of infected milk and heredity, which are governed by other regulations of the Health Board, the report goes on to say that it would not be wise to antagonize public sentiment, which is not yet educated and aroused to the necessity of official interference, and strike terror into the hearts of the sufferers from the disease by abruptly compelling registration. A middle course is suggested, which would not be offensive, comprising the encouragement of registration as a preliminary to a future requirement, and requiring disinfection on the advice of the attending physician, after the death or removal of the patient. The report continues as follows:

"The weight of medical opinion in this city appears to be against the registration of pulmonary tuberculosis and the assumption by the Board of Health of the duty of active supervision and disinfection, and thus the medical profession indirectly assumes the responsibility of administering the necessary prophylactic measures applicable to this disease. It is, therefore, right and proper and necessary that the profession should realize acutely the weighty obligation which they have assumed, and they should coöperate with the Board of Health in the distribution, in the households where this disease exists, of circulars of information upon the prevention of consumption, and advise the Board of Health whenever disinfection is required. The distribution of official circulars will have the effect of enforcing attention to those sanitary details so apt to be neglected or overlooked, and thus diminish the risk of contagion in the community."

In view of its conclusions the committee offered a series of resolutions, which were adopted. They embrace recommendations that registration be postponed for the present; that circulars containing rules for the prevention of the disease be distributed; that physicians be requested to coöperate with the Board in the distribution of these circulars, and to notify the Board of cases in which disinfection is required; that a medical inspector visit each house in which a death from tuberculosis has occurred, and satisfy himself that the premises have been disinfected, and that all cases of tuberculosis reported to the Health Bureau be recorded as are cases of other contagious diseases.

Accompanying the report was a circular setting forth the various means by which tuberculosis can be communicated, and the methods of preventing its spread.

Pennsylvania Training-school for Feeble-minded Children.—At a recent meeting of the Board of Directors of the Pennsylvania Training-school for Feeble-minded Children, at Elwyn, the following medical and surgical staff was appointed: Neurologists—Drs. S. Weir Mitchell, H. C. Wood, Charles K. Mills, J. Hendrie Lloyd. Physicians—Drs. J. Madison Taylor, D. T. Laine. Surgeons—Drs. W. W. Keen, John B. Deaver. Orthopedic Surgeon—Dr. T. G. Morton. Otologist—Dr. C. S. Turnbull. Ophthalmologist—Dr. S. D. Risley. Laryngologist—Dr. S. Solis-Cohen. Gynecologist—Dr. A. E Broomall. Pathologists—Drs. H. W. Cattell, Joseph Leidy. Dental Surgeon—Dr. T. C. Stellwagen. Chief Resident Physician—Dr. M. W. Barr. Assistants—Drs. Frank White, Louise H. Llewellyn.

Medical Society of the State of Pennsylvania.—In view of the fact that the largest hotel in Gettysburg was burned recently, and will not be rebuilt in time for the coming meeting of the Medical Society of the State of Pennsylvania, to be held May 15th, 16th, 17th and 18th, 1894, it was thought proper, after consultation with the Board of Trustees, to change the place of meeting, and as the Philadelphia County Medical Society extended an invitation to meet in their city, this was accepted.

H. C. MCCORMICK, M.D.